Carl Porter

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McDonnell F-101B/F

by Kevin Keaveney

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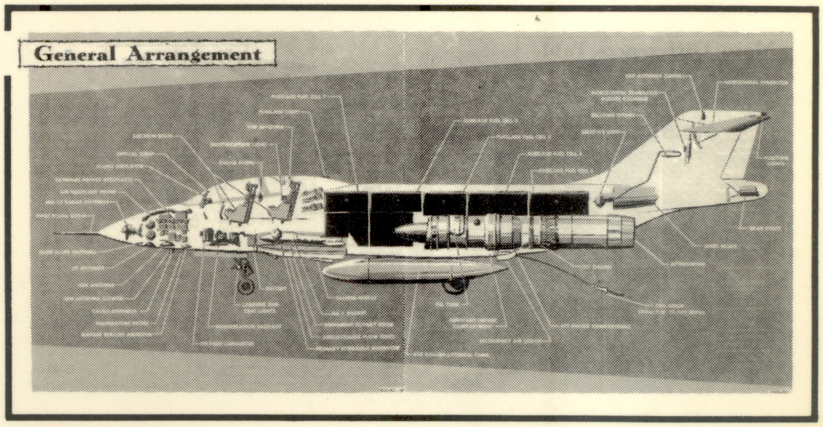

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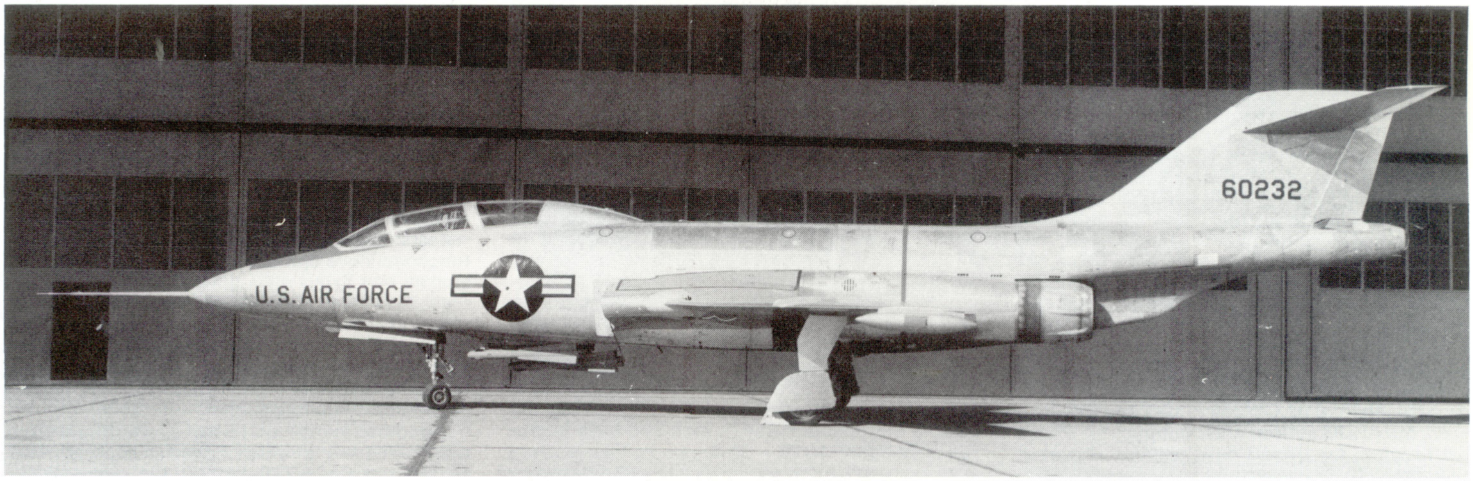
THE MCDONNELL F-101B/F *VOODOO* STORY



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Shortly after beginning its flight test program in late March of 1957, the prototype F-101B, 56-232, poses for a company photo session at the McDonnell plant in St. Louis. Podded cameras for photographing AIM-4 and AIR-2 launches were mounted on the wingtips. Early, short exhaust nozzles are noteworthy.

CREDITS:

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PROGRAM HISTORY:

Development of the F-101B took place at a time when the USAF was going through radical changes in developmental and procurement policies. Adopted by the Air Force through these new policies were new testing, support, production, and weapon system concepts, all of which had been previously untried. To further complicate matters, all the above programs were time phased with each other requiring a rigid schedule to be adhered to by all agencies in order to bring the weapon into operational status sooner than possible under the previous Air Force policies. Thus, aircraft procured during the 1950's, such as the F-101B, became mechanical guinea pigs to an experimenting AF.

A factor contributing to these new policies was the advent of high-technology aircraft programs, as exemplified by the Century series fighters. No longer were the Air Force and aerospace manufacturers building one-off exotic experimental types to be flown by highly specialized test teams; they were producing aircraft in limited quantities to be flown by test teams, augmented by large numbers of operational Air Force personnel. As the test program proceeded, the limited number of aircraft being produced would be gradually increased to full production levels, thus providing larger numbers of aircraft to operational units at the earliest possible time. Technology not only affected the aircraft manufacturers, but also hindered sub-system manufacturers dealing in such areas as powerplants and fire control systems. This made coordination for the Air Force that much more difficult. In conclusion, the fault with high-technology proved to be the technology itself; the situation facing both the Air Force and manufacturer was that for every problem corrected, there seemed always to be another ready to take its place, costing both time and money to all concerned — an inevitable result of pushing the state of the art.

Though the progenitor of the F-101 family, the XF-88, and later the actual F-101A, were originally conceived for service with fighter squadrons of the Strategic Air Command, the three Air Force Commands most actively involved in later F-101B development were: the Air Research and Development Command (ARDC), the Air Material Command (AMC), and the Air Defense Command (ADC). The ARDC was responsible for development and engineering, the AMC was responsible for procurement and production, and the ADC was initially responsible for support to the other two commands to bring the aircraft on line. From these Commands, subordinate organizations like the ARDC's Wright Air Development Center (WADC) and the AMC's Ogden Air Material Area (OOAMA), almost immediately began playing an important role in furthering development of the *Voodoo* interceptor. To supplement these groups, a joint ARDC-AMC office, the Weapon System Project Office (WSPO), was created to oversee the entire F-101B development program.

ARDC involvement with the F-101 configurations leading to the F-101B began in earnest during November and December of 1953, when the command began evaluating possible stop-gap interceptor proposals from McDonnell (F-101B), Northrop (F-89F), and North American (F-100BI which later became the F-107). Officially authorized by the Air Force in May of 1954, this competition was brought to a successful conclusion for the McDonnell entry, (created by chief engineer Edward M. Flesh and known in-house at McDonnell as the Model AT36AT) a year later. Air Force documents convey the impression that the F-101B was never seriously challenged by its competitors. All points fell in favor of the new F-101 variant, for not only did it win on technaical merit (giving it the WADC's blessing), it also benefitted from the ADC's support, which dated back to October of 1952.

Once the competition was completed, all activities concerning the F-101B weapon system were coordinated and managed through the aforementioned WSPO. Within the WSPO, personnel from both the ARDC and the AMC worked together to provide the time phased plan necessary to effectively coordinate research, development, contracting, production, training, and provisioning. The ARDC's staff personnel oversaw the technical aspects of the program, while AMC staff personnel managed all production and procurement matters. Initial responsibility for WSPO executive control rested with the ARDC until production surpassed testing as the key component needed to bring the F-101B into operations. At that time, executive control transferred to the AMC.

Once the WSPO was in place, development of the interceptor took two courses. By McDonnell initiative, the interceptor proceeded under a single-seat concept, as specified on July 10, 1954. The WSPO helped to further define the McDonnell course by quickly authorizing a cockpit/nose mock-up. An inspection of this mock-up took place on November 3, 1954. However, a month before the inspection, the AMC in a separate initiative, directed that a second course be explored by requesting a study for a two-place version. Inevitably, the two development programs reached head towards the end of November of 1954, when the Air Force was requested by the WADC to choose one of the two designs (either single or two seat). By this time, the two-place version had gained Air Force favor and was given the go-ahead as an interceptor on February 25, 1955, with a letter of intent, covering the long-range interceptor system WS-217A, following on March 3. Mock-up inspection of the two-place version took place on September 14th and 15th of 1955.

Aside from studies concerning the number of F-101B crew members, the Air Force also evaluated several armament and powerplant configurations. Powerplants such as the Wright J67, the Pratt & Whitney J75, and the General Electric J79 were all proposed and evaluated against the single-seat *Voodoo*'s Pratt & Whitney J57, while fire control development progressed from the MG-3 (later known as the MG-10) of the Convair F-102, to the more advanced MG-13 (the latter eventually being chosen to equip the F-101B). Concurrent to both powerplant and other sub-systems development was the progression of the aircraft's armament system from an all-rocket package, through a rocket and missile combination, to a mixture of nuclear and non-nuclear warhead missiles. By standardizing elements such as the powerplants and armaments before actual flight testing, the Air Force was able to better compress, and time phase, the development of the entire F-101B program.

To comprehend the importance of time phasing to the Air Force, one needs to understand the weapon system concept which led to its creation. The weapon system concept, as originated in the early 1950's, was an attempt to better manage the testing, production, and operational use of new aircraft then becoming available. Included in the weapon system was not only the airframe, but also the powerplant, the fire control system, the armament, the training aids, the ground support system, and the spare parts. In other words, a weapon system encompassed all the necessary hardware and software needed to keep the system operational throughout its service life. The end result of adopting the weapon system concept was a compressed time span from the aircraft's conception to operational status; a goal much more difficult under the old prototype system. This does not suggest a weapon system could not be modified to new equipment or missions. On the contrary, as has already been seen, the *Voodoo* went through a number of sub-system changes between 1953 and 1955.

Flight testing, an ARDC responsibility, bore heavily on the effectiveness of the time-phased schedule set forth for the F-101B program. Until the advent of the F-101B, Convair F-106, and Republic F-105, the ARDC utilized a decentralized 8 Phase Test Program for aircraft development. However, the 8 Phase Test program was not compatible with the new Weapon System Concept and Cook-Cragie (see explanation below) production policies. To rectify this, the ARDC implemented a centralized Category Test System. The Category Test System strove to accomplish two goals: first to compress the time needed to test a new aircraft; and second, to integrate ADC personnel into the testing process at the earliest possible moment. ADC participation did indeed start early, as personnel were involved no later than the commencement of Category II testing.

In respect to procurement and production matters, the AMC was accountable for supply and maintenance not only for the F-101B, but for the entire F-101 fleet. Following a period of consolidation and decentralization between 1952 and 1953, AMC assigned procurement of spare parts and depot level maintenance for the F-101 to the Ogden Air Material Area (OOAMA) while retaining the procurement functions. This, in essence, resulted in the contracting and production management of aircraft and sub-systems to the AMC side of the WSPO. Initial work for the OOAMA involved: coordinating matters with US Navy/McDonnell plant administrators, providing quickfix teams at the McDonnell plant for implementing modifications, and monitoring flight tests.

The Cook-Cragie Plan under which the F-101B was produced meant to place the aircraft into operational service by the shortest possible time. As broken down by Robert F. Coulam, author of *Illusions of Choice, the F-111 and the Problem of Weapon Acquisition Reform*, the plan (also known as Concurrency) consisted of four parts: (1) increasing the number of R&D prototypes of the weapon; (2) producing the R&D prototypes on "hard" production tooling (versus having them hand built on "soft" tooling); (3) accelerating the testing phase of the developing, by using the increased number of R&D prototypes; and (4) commencing production of the weapon system during the testing phase, to avoid delays in securing long lead-time production items.

To simplify, F-101B's were produced at a gradual rate throughout the Category Test program. When modifications were deemed necessary, the OOAMA quickfix teams would incorporate them on the F-101B's currently being assembled. Those *Voodoo's* previously delivered to the Air Force were later brought up to the new production standard through either McDonnell or the OOAMA. The success of the Cook-Cragie Plan, however, hinged on the aircraft being close to perfect from the very beginning of production — a prerequisite the *Voodoo* did not meet.

To substantiate the hard tooling concept, all F-101B test aircraft were assembled from production tooling. Many of these aircraft were later upgraded and reassigned to active interceptor units. The fact that F-101A aircraft were configured to test certain aspects of the F-101B system paid off in terms of time; armament system testing started a full sixteen months before the first F-101B took to the air.

The contractual history of the F-101B helps illustrate the way in which the Air Force initiated the interceptor's development and later restrained production in an attempt to solve all development problems during early production. Initial F-101B costs were billed to Procurement Contract AF33 (600)-8743, which originally stipulated funding for F-101A aircraft, YRF-101A aircraft, and F-101A special stores studies. The Air Force continued the practice of including F-101B funding with that of single-seat *Voodoo's* under contract AF33 (600)-29841, when 39 F-101A's, 7 RF-101A's, 166 RF-101C's, and 97 F101B's, were procured. With contract AF33 (600)-32754, however, the F-101B reached a new level of priority in Air Force procurement, as a separate contract was provided to McDonnell for funding F-101B flight testing and development costs.

Following the 97 F-101B aircraft procured under '29841, orders for 383 more interceptors were received by McDonnell under contracts AF33 (600)-33708/34918/36762. The planned production peak was for 20 aircraft a month, until raised to 25 aircraft a month in November of 1957. By the end of September, 1958, it took 208 days to produce a single F-101B — 30 days more than McDonnell expected. At times production was delayed by *Voodoo* fleet groundings, inclement weather, and aircraft modifications. Thus aircraft deliveries were slowed, and flight testing fell behind the production output. Col. Roy A. Jaynes, Chief of the WSPO, summed up Air Force frustrations about F-101B production problems in correspondence to the OOAMA Procurement and Production Directorate, "The late delivery of F-101B test aircraft has again placed the Air Force in the position of accepting a weapon system before it has been fully tested and proved."

Production problems were areas of sore contention with the Air Force. After the F-102 debacle, when aircraft production outpaced the flight test program resulting in expensive and time consuming retrofits, the Air Force realized the shortcomings in the Cook-Cragie Plan. Now with the F-101B program, as well as with other aircraft, the Air Force fought to avoid the same results. What was deemed needed in the F-101B was slowing of production to allow the flight testing to get back on schedule. Such a solution was unenthusiastically received by McDonnell in June of 1959, when the Air Force reduced the monthly production rate back down to 20 aircraft. The resulting effect on McDonnell led to the layoff of a thousand employees. Eventually the production rate stabilized and terminated on March 31, 1961, when the last F-101B was accepted from McDonnell President James S. McDonnell at the company's St. Louis, Missouri plant, by Lt. Gen. Robert M. Lee, Commander of the ADC.

Throughout the late 1950's, the *Voodoo* suffered from spare part and support equipment shortages, fire control system maintenance headaches, and the sometime fatal results of several then little-understood aerodynamic phenomena known as nose pitch up, inertia coupling, and nose pitch down (three distinctly different problems). While problems with equipment and training could be dealt with administratively, problems with the aircraft could only be corrected through flight testing.

Flight testing commenced with the lift-off of the prototype F-101B (officially designated NF-101B-30-MC), 56-232A, with company test pilot Robert C. Little at the controls, from Lambert Municipal Airport, Missouri, on March 27, 1957. The phased test program, which began with the first flight, was conducted between March 1957 and December of 1959. The majority of the test flights were undertaken at Edwards AFB, California, Eglin AFB, Florida, and Otis AFB, Massachusetts. Concurrent to the test program at these bases, the F-101B was also subjected to a series of weapon system tests at Holloman AFB by the Air Force Missile Development Center. Later in 1960, the same organization performed additional tests on the F-101B. F-101B contractors participated in the test program as needed by the Test Force.

The F-101B test program included a large number of research aircraft. At Edwards AFB alone at least five F-101's, two of which were F-101A's, were involved in F-101B tests. Eventually, a total of no less than fifty F-101B's made up the ranks of those aircraft assigned to all categories of tests. The following illustrates the breakdown of Category testing and the supporting agencies:

CATEGORY I

Flown By: Contractor, AF Flight Test Center

Tests: Airworthiness and equipment functioning, contractor compliance, design refinement

CATEGORY II

Flown By: AF Flight Test Center, Wright Air Development Center

Tests: Stability and performance, all- weather, functional development

CATEGORY III

Flown By: Air Proving Ground Center, 60th Fighter Interceptor Squadron

Test: Employment and suitability, unit operational employment testing

In addition to the F-101B test aircraft, there were two F-101A aircraft which played an important role in the test program. F-101A, 53-2436, carried the F-101B armament configuration for three flights in early 1955; and F-101A, 53-2426, became the F-101B engine testbed. According to Paul D. Stevens, noted F-101 historian, the "engine intake/afterburner configuration (of '2426) was similar to, but not identical to, the basic configuration that was subsequently employed on most F-101B/F aircraft."

Category II flight tests which took place in late 1958 to late 1959, were conducted for the most part at Eglin AFB under the auspicious eye of the Air Proving Ground Center. However, at least one Category II test was conducted at Edwards AFB. This test, the stability and control evaluation, was conducof Capt. Noroin C. Evans (pilot) and 1st Lt. Charles O. Johnson (engineer) between August 28, 1958, and April 6, 1959. The aircraft used was 56-247, which tallied 54 hours in the air during 52 flights. At the Eglin site, tests included weapon system evaluations, and SAGE (Semi-Automatic Ground Environment) Integration Tests.

Besides inertia coupling, the F-101B, and all other versions of the F-101 also suffered from a serious, and oftentimes catastrophic pitch-up problem. While this could not be permanently corrected without a major redesign of the F-101 airframe, the Air Force did provide a device to help control the effect. The problem, as well as the device, are best summarized in the following quote from an interview conducted by Mr. Kenneth Leish with Maj. Gen. Albert Boyd in June of 1960: "The F-101 was a two-engine, more or less convention, swept-wing aircraft; however here again we experienced a new phenomenon — that of pitch-up at very high speeds. And it was necessary to develop an automatic pitch control because the average pilot could not sense this pitch-up in time to prevent it. So we developed and incorporated an automatic pitch control which would actually shove the stick forward, out of the pilot's hands if he wasn't extremely alert, as it approached the pitch-up. Because once the airplane pitched up, it then fell into an oscillating spin at very, very low airspeeds (the speed usually got down to about 130 knots) and the pilot was unable to recover because he couldn't accelerate the engines. The engines were in a stalled condition. And of course there wasn't enough pressure on the control surfaces to bring the airplane out, so it would actually spin in. We lost a couple of pilots; one pilot went in with the airplane, and two pilots were able to eject. This was our first experience with this type of pitch up. The horizontal tail was located fairly high on the vertical fin. What was happening, I think, was that we were actually experiencing a flow separation that extended over the horizontal tail."

Air Defense Command's evaluation of the F-101B commenced on January 5, 1959, when the first F-101B was delivered to the 60th FIS at Otis

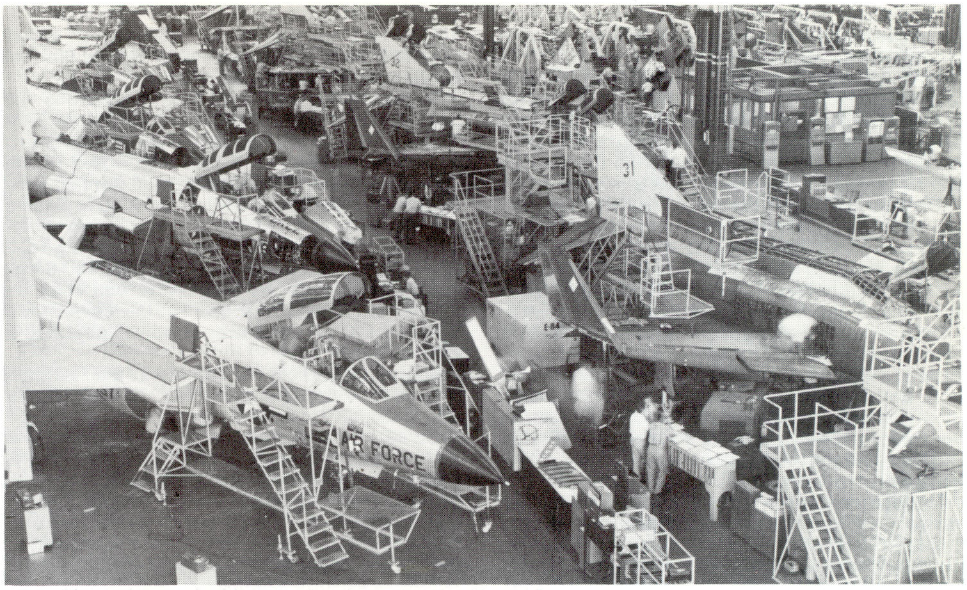
AFB, Massachusetts. The designated test squadron for all Category III flight tests, the 60th FIS officially began the transition to the F-101B on January 15 of the same year. From this date to early December 1959, the Category III tests could be broken down into six phases: transition, combat crew training, tactics and techniques, squadron war exercise, weapons .center deployment, and operational readiness testing. The tactics and techniques phase was further broken down into five parts: functional adequacy of the fire control system, electronic countermeasures, tactical profiles, final phase tactics, and manual tactical applications. In addition to testing the aircraft, all aspects of squadron operations, to include evaluation of such objects as the MB-40 flight simulator, were critiqued by test personnel. Even the Navy's Mirror Landing System installed at Otis AFB fell under the critical eye of the Test Force. Three key points for the Test Force evaluations were: aircraft reliability, special operational problems, and intercept performance.

During mission testing, both SAGE and manual modes of intercept control were impressed upon the 60th FIS. The Boston Air Defense Sector provided manual control, while the experimental SAGE Sector, located at the Air Force Cambridge Research Center, performed the role of SAGE director. Simulated intercepts conducted under both systems keyed on analyzing the success rate of both types of F-101B armament. Refinements to the aircraft's MG-13 Fire Control System, such as doubling the radar sweep from 30 to 60 miles, became possible as the system progressed through operational missions. Targets were engaged at all altitudes enabling the 60th FIS to also test the effective combat radius of the *Voodoo*. For targets flying at 1,000′ and 35,000′ to 45,000′ and engaged with the AIR-2A air-to-air missile, the combat radius was 375 nautical miles and 321 nautical miles, respec- tively. For the 1,000′ intercepts the radius took into account five minutes at military power, whereas in the last two altitudes the *Voodoo's* were operated in the afterburner mode for five minutes.

Targets for the 60th FIS varied. While most of the targets were T-33's and B-57's, other types such as the B-47, the RC-121, the C-130, the KC-97, the DC-7, the SA-16, and the C-118, also participated. In addition, a RAF *Brittania* helped to provide an exotic difference to the aircraft types already mentioned. While these aircraft provided targets for roving 60th FIS pilots, two other types deserve special mention as they effectively evaded interception. In the first case, a specially equipped KC-135, wielding sophisticated ECM, foiled attempted F-101B intercepts. The second failure came against F-104 targets; twice F-101B's were unable to meet the challenge of individual *Starfighter's* flying around 60,000′ at Mach 1.9.

Category III tests did not pass without idiosyncrasies arising in the fire control system, the airframe, and the hydraulic system. In particular, the fire control system proved temperamental in respect to its Data Link system and circuitry systems. Cooling and moisture problems also plagued the mission capability of the MG-13. Not only were shortcomings present in the FBC, but heat damage to the Hughes AIM-4 *Falcon* air-to-air missiles was found. Adding to such problems, corrections had to be made to the armament system to safeguard against the possiblity of premature launching of the AIM-4's, which if allowed to happen, would have resulted in the affected missile detonating 2.5 seconds after launch. Additional problems uncovered over the many months the Joint Force tests were in effect included canopy separations, drag chute failures, and on several occasions, instrument panels falling into the laps of pilots.

The Joint Test Force put forth a number of recommendations for future F-101B operations. The opinion of the JTF was that the F-101B squadron should reorganize before the arrival of the first *Voodoo*. Once such reorganization had taken place, the squadron would be capable of 350 sorties per month for a 65% to 70% Operational Readiness Rating. By far the most far reaching recommendation called for F-101B's to utilize a cutoff vector to position for head-on attacks against threat aircraft. While seemingly just a declaration of tactics, in reality such a deviation from previous Air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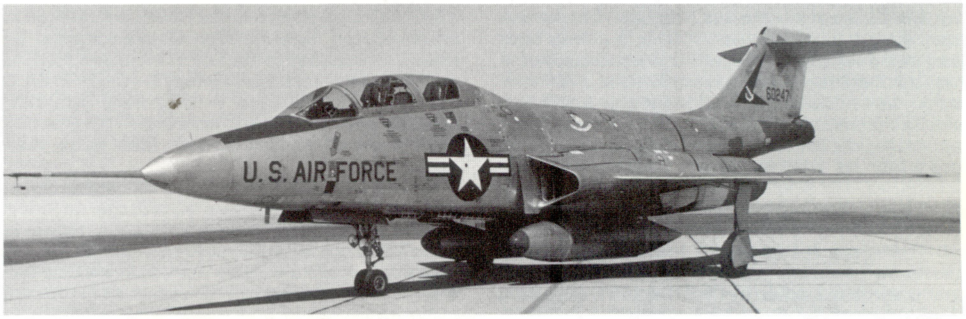
Near the end of its production run, the F-101B was being replaced rapidly on the McDonnell production line by the significantly more capable F-4. Late production F-101B's in the photo lacked i.r. sensors.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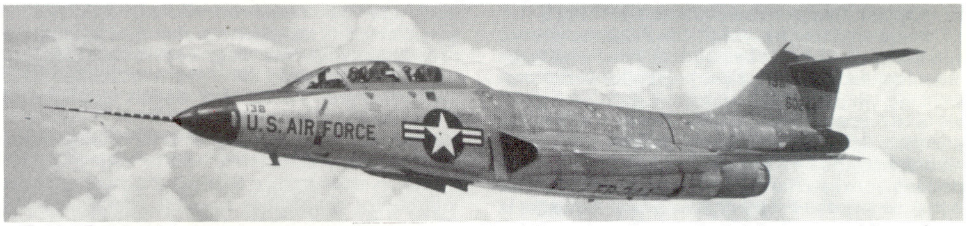
Early test F-101B's, such as F-101F, 56-247, seen undergoing test work at Edwards AFB, were distinctive in having metal nose radomes with test instrumentation mounted in the space normally occupied by the radar system.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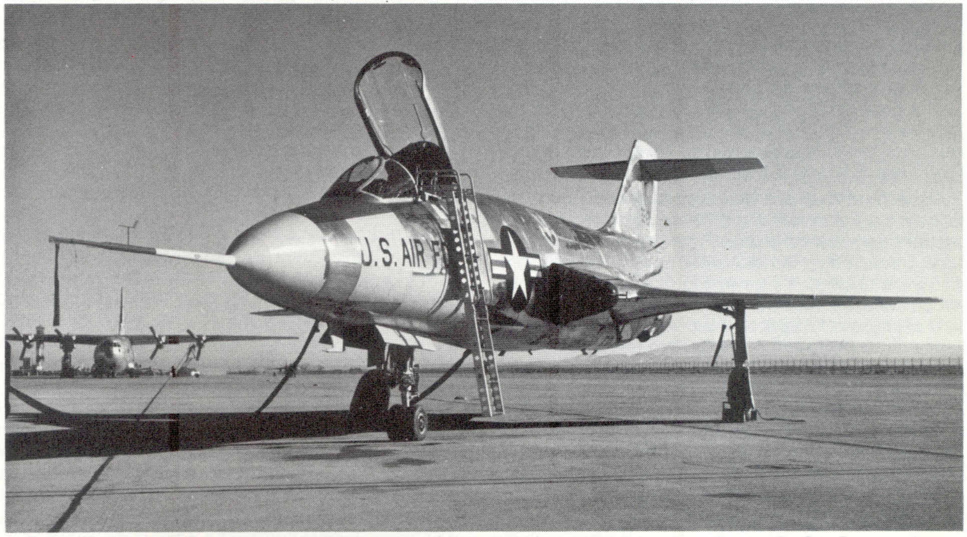
F-101F, 56-244, bearing orange radome, vertical fin, wing tip, and stabilator markings for photo and visibility purposes, poses for McDonnell photographer. Aircraft was also carrying orange-painted inert practice AIM-4's and retained early, short exhaust nozzles.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F-101A, 53-2426, served as the engine (J57-P-55) testbed for the F-101B. On December 12, 1957, this same aircraft, with Maj. Adrian Drew of the 27th FBW at the controls, set a short-lived world's speed record of 1,207.6 mph over a closed course at Edwards AFB.

Defense Command practices gave to the organization a capability not possible with its former inventory of F-86's, F-89's, and F-94's.

The F-101B, as with most AF aircraft, was subject to a number of small test programs throughout its operational life either indirectly or directly. These tests were in addition to the test program conducted by the JTF. Many tests, such as the runway barrier evaluations at Edwards AFB in the 1960's, led to modifications to the entire F-101B fleet. Typical of these corrections was the placement of deflector plates between the engine air intakes and the AIR-2A's when it was discovered the rockets created a flow disturbance which interfered with engine operation at high speeds. While the F-101B seemed to be plagued with many problems, it must be remembered that other aircraft programs, notably those of fighter interceptors, all suffered from similar difficulties. The goal of the Air Force thus became to balance the problems with the advantages. The hope was to increase mission capability without increasing the complexity of systems, faults, or costs.

Throughout early F-101B operations there existed an unofficial competition between it and the Convair F-106. With the extreme costs of the F-106 program, both the F-101B and F-106 systems faced possible cancellation in an either/or situation. Helping to boost F-106 costs were problems associated with poor acceleration, unreliable development of the J75 engine, and a poorly performing MA-1 fire control system. The MA-1 was at one time slated to equip the F-101B, but was later dropped due to its complexity and expense. At the time, Air Defense Command argued that both interceptors were compatible, and together would provide a formidable defense team. The argument proved logical to the Air Force, and both types were procured. As one-half of the future interceptor force, the F-101B immediately began to distinguish itself by completing the first supersonic radar intercept on June 9, 1958. Factors in continuing the F-101B program rested on the aircraft perpetuating the Air Defense Command tradition of having a two-man crew (as reflected by the F-94 and F-89) giving the F-101B an inherent level of reliability over the more "black box" oriented single-seat interceptors. Also in favor of the F-101B was the fact that the F-101B came equipped for aerial refueling, a feature no other interceptor had until the mid-1960's.

The downfall for the F-101B in its battle against the F-106 came in the mid-1960's. The Air Defense Command adapted the policy of global air defense thinking, which called for an interceptor capable of air-to-air operations against all threat aircraft including fighters. In support of this new concept of air defense, the Air Defense Command held a competition between the F-102, F-104, and F-106. The outcome saw the F-106 declared best, but what is more important in terms of the F-101B was its absence from the competition. While capable as an interceptor, the F-101B was not a fighter — a thought reiterated by many ADC officers such as Col. Leon W. Gray, former commander of the Portland Air Defense Sector. After the competition, the F-106 steadily gained against the number of F-101B aircraft left on active duty roles, and eventually provided the bulk of interceptors in active squadrons. The F-106 also participated in numerous overseas deployments to Alaska and Korea, while the F-101B was left at home.

After the arrival of F-101B aircraft with the 60th FIS, activation of new F-101B squadrons occurred in four time-related groups. The first group consisted of the 84th (Hamilton AFB), 98th (Suffolk Co. AFB), and 322nd (Kingsley Field) squadrons, all of which initiated *Voodoo* operations in June of 1959. In December of 1959, the second group, made up of the 2nd (Suffolk Co. AFB), 13th (Glasgow AFB), 49th (Griffis AFB), 62nd (K.I. Sawyer AFB), and 75th (Dow AFB/Wurtsmith AFB) squadrons, also began operations. The third group, comprised of the 15th (Davis Monthan AFB), 18th (Grand Forks AFB), 29th (Malstrom AFB), 87th (Lockbourne AFB), 437th (Oxnard AFB), 444th (Charleston AFB), and 445th (Wurtsmith AFB) squadrons commenced *Voodoo* operations during June of 1960. The fourth group made up only with the 83rd, became the last squadron to gain *Voodoo's*, in August of 1960. On September 30, 1968, the 59th and 75th, respectively, replaced the 322nd and 445th at their home stations. *Voodoo's* replaced one squadron of F-104's, three squadrons of F-102's, seven squadrons of F-89's, five squadrons of F-86's, and one squadron of F-94's in ADC service.

In twenty months, seventeen squadrons had begun F-101B operations, and by June of 1960, the *Voodoo* had become the most numerous aircraft in the ADC inventory — a feat that would remain unchallenged for the next four years. Conversion to the *Voodoo* was completed by the ADC in December of 1960; at this time nine of the seventeen squadrons were rated C-1, seven were rated C-2, and one was rated C-3 (C ratings are the combat capability level of the squadrons with 3 as the lowest state of readiness and 1 as the highest), with 70% of the 371 F-101B aircraft individually rated as combat ready.

Another squadron, the 449th, was also slated to receive the F-101B in March of 1960 under *Operation Goldrush*. Under this project, the 449th was to become operational at the squadron's home station of Ladd AFB (now known as Ft. Wainwright), Alaska. Aircraft under the project were to be ferried to Hill AFB from the factory, where Alaskan Air Command pilots were to pick them up. By April 22, 9 aircraft out of a total of 20 were still at Hill. In addition, 99% of the initial ground support equipment and spares were processed and delivered to Ladd. Within a week the entire project was cancelled by the Air Force without explanation. This decision was later to haunt the AF, because on March 15, 1963, two high-performance Soviet aircraft had an uninterrupted flight through Alaskan coastal airspace. In response to the Soviet incursion, NORAD suggested the rotation of either F-101B, F-106, or F-4 aircraft into Alaska. F-106's were eventually sent, but it is interesting to note that F-101B's could have been on station no less than three years earlier.

Typically, the ADC F-101B aircraft were deployed in separate, self-sustained squadrons on bases controlled by other major commands. However, there were two exceptions to this rule. In the first exception, when a *Voodoo* squadron was the only major flying activity on an ADC base, as in the case of both the 322nd and 437th, then a numbered group headquarters would be formed to oversee squadron operations. The other exception to the rule was when two squadrons were located on the same base. If this occurred, the ADC formed a numbered wing and tasked it with control of both squadrons. Accordingly, two wings were formed to control *Voodoo* squadrons; the 78th at Hamilton AFB, California, and the 52nd at Suffolk County AFB, New York.

After the initial posting of F-101B squadrons, ADC planners continually had to adjust *Voodoo* assets in order to give NORAD the most effective interceptor capabilities possible. Under the title "Force Programming" ADC contemplated and organized its interceptors to meet future operational needs. Between 1962 and 1964, a series of programs were devised for interceptor levels through FY '69. Of 41 programmed squadrons, 17 operated F-101B's. In 1969, of 37 programmed squadrons, 14 were to be equipped with *Voodoo's*. In comparison, there were to be 14 F-106 squadrons in the 1966 Fighter Interceptor Program, and 14 in the 1969 estimate.

In sharp contrast, the DoD, in May of 1964, then under the direction of Robert S. McNamara, created a "Tentative Force Guidance" document which proposed to reduce the interceptor force to 21 squadrons by the end of FY '67, 18 less than the Force Programming had estimated. Though turned down by ADC planners, the document is of interest to any F-101B study as the plan made provisions for only 8 *Voodoo* squadrons. The 8 squadrons were to be based at Hamilton AFB, Kingsley Field, Glasgow AFB, K. I. Sawyer AFB, Oxnard AFB, Griffiss AFB, Otis AFB, and Suffolk County AFB.

Such Force Programming was a necessary duty in respect to defense needs and assets. Above the ADC's ability to move, or manipulate, the size of its subordinate units, were outside influences such as budget and policy constraints. In mid-1976, after the F-101B had logged many years in the inventory, Air Force plans called for the disban- donment of Air National Guard F-101B units by the end of FY '77, and active duty by FY '84. By late 1976, that goal had changed so that three-fourths of the ANG F-101B strength was to be retained through FY '80. At one point, the Air Staff contemplated keeping the F-101B's operational into FY '86. However, in June of 1979, this objective had been reduced to FY '83. Even at that point the Air Staff remained unsure of the fate of the F-101B fleet.

The F-101's basic mission was, of course, interception of enemy aircraft. In order to accomplish this, two options were available. One involved a manual mode wherein the GCI (Ground Control Intercept) controller would give voice commands and target information to vector the interceptor into a position from which the aircrew could take control of the intercept using the F-101B weapons control system; the other utilized the SAGE system wherein data-link signals, conveying steering commands, target heading and altitude, range, and azimuth information vectored the F-101B to its target automatically, making voice commands unnecessary.

Under both manual and SAGE control, the interceptor is vectored to an offset point and turned to a final approach heading for the identification pass. Ideally, at the roll-out from this final turn, the aircraft would be positioned three miles astern of the unknown aircraft, on a parallel heading and with an aspect angle of plus or minus 20-deg. During the final phase of the intercept, the radar observer would acquire the target on radar, transmit "Contact, Judy" and take control of the intercept terminal phase.

The radar contact range with a properly tuned fire control system could be in excess of thirty miles on a bomber-size target but was normally 25 to 30 miles, well outside the intercept offset point. The R.O., after confirming the target, would lock-on and give commands to the pilot to complete the i.d. pass. After closing to minimum range, visual contact was established and positive identification was made. If the aircraft was declared hostile, the aircrew would be cleared to engage and would be immediately vectored outside optimum weapons firing range for a re-attack using the primary armament, the Douglas AIR-2A *Genie* nuclear warhead AAM, or the secondary armament, the Hughes AIM-4 radar- or IR-guided AAM.

In an actual hostile environment, or during exercises to simulate such an environment, the attacking aircraft would be declared hostile and interceptors would be vectored in for the attack using various intercept procedures depending on the tactical situation. These procedures included the stern attack, cut-off attack, cut-off snap-up, and re- attack.

After the intercept was completed, various escape maneuvers could be implemented by the crew to remove the aircraft from the detonation area. In respect to an AIR-2A attack, three escape maneuvers were possible. To execute a Low Altitude Escape Maneuver, the F-101B would establish a 60-deg. bank and then pull maximum load factor g's as rapidly as possible. Both bank and load factor would then be maintained until the heading changed at least 135-deg. from the launch heading. The Snap-Up Escape Maneuver, in essence a modified Split-S, differed in that after the AIR-2A launch, the *Voodoo* would reduce g loading and roll into an inverted position. The pilot would then execute a smooth pull-through until reaching a 40-deg. dive angle, roll-out, and pull out to level flight.

Low altitude use of the AIR-2A was not recommended due to the maneuver requirements to escape its blast affects, and the ever-present possibility of the nose pitch-up problem and its associated loss of altitude. Additionally, AIR-2A launches at low altitude were not recommended because the severity of the blast shock wave would be compounded by the close proximity of the ground.

In addition to the alert mission performed by the ADC, a number of unrelated but interesting jobs were accomplished by the various *Voodoo* squadrons. Twice, once in 1960, and later in 1965, the *Voodoo* provided the aerial platform for filming AF fighter competitions. Also, beginning in 1960, future AF leaders from the AF Academy received F-101B orientation flights from the 84th under the title of *Project Falcon*. By the program's end, 2,100 cadets had been given flights. Under *Project Top Flight*, other AF and Pentagon officials were also given rides.

The F-101B also contributed to other aircraft programs, as illustrated by *Voodoo's* participating in F-111 system checks in March of 1966. During these tests, F-101B's maneuvered and fired missiles against F-111 targets. The missiles were fired outside their effective range, thus purposefully falling short of their intended targets.

Two *Voodoo's* of the 29th FIS were involved in a more peaceful mission when they took part in *Operation Safe Slide*. Hazardous snow accumulations were removed in Glacier National Park by utilizing the overpressures created during supersonic passes made by 29th F-101B's. Earlier in the *Voodoo's* career, on October 2, 1959, a specially equipped F-101B flew at 1,080 mph in order to permit the recording of 6 minutes and 51 seconds of a total eclipse of the sun over the Canary Island area. Research into severe storm conditions were performed under the auspices of Colorado State University using civilian registered F-101B, N-8234 (ex-USAF 57-410).

Of immense importance to operational F-101B squadrons was the *Voodoo* contingent assigned to the 4756th Combat Crew Training Squadron located at Tyndall AFB, Florida. The 4756th, while operating many types of ADC aircraft, had three primary missions in relation to the F-101B. First, the squadron provided aircraft training for radar observers, pilots, and instructor up-grade. Secondly, the unit continually reviewed all F-101B flight manuals and weapons manuals to keep the documents abreast of aircraft and tactical developments. The third responsibility was to support activities of the Air Defense Weapons Center co-located at Tyndall with target towing and weapon test missions. Many of the tests were of short duration as typified by those conducted in February of 1964 when *Voodoo's* helped prove the feasibility of using obsolete Boeing *Bomarc-A* missiles as drones to test intercept capabilities. While not a standard fighter inter- ceptor squadron, the 4756th did provide operationally ready aircrews for local air defense alerts.

After being redesignated the 2nd FITS on September 1, 1974, the squadron carried on in much the same manner as it had when it was designated the 4756th. However, one new mission was added to the squadron's duties, that of electronic agressors. By using chaff and electronic countermeasures, the 2nd FITS deployed throughout North America to test NORAD responses. The training program formally conducted by the 4756th diminished to the point of providing training for only those aircrews destined to serve at Tyndall. At the time when the interceptor force changed commands from the ADC to the TAC, approximately 20 F-101B's were on hand. The 2nd operated the last active-duty F-101B's, giving up its last airplane, 58-300, on September 21, 1982.

At different times, many Air Material Command facilities participated in the F-101B maintenance and support workload. Included were Middletown, Warner-Robins, Mobile, San Antonio, Oklahoma City, and Ogden. Ogden (the OOAMA), performed most of the TCTO's (Time Compliance Time Orders), and IRAN (Inspect and Repair As Necessary). IRAN work took an average of 90 days out of each two years for each aircraft. *Kitty Car* was the first major modification program applied to the F-101B. Created mainly in order to upgrade the fire control system, the project standardized all *Voodoo's* to Block 120 configuration. Fourteen of seventeen squadrons were involved in the project which lasted from June 15 to December 31, 1961. Some 40 changes were involved.

The second of the major F-101B modification programs came between 1963 and 1966 under the IIP (Interceptor Improvement Program), which was otherwise known as *Bold Journey*. Modifications centered around improvements to anti-ECM capabilities and improved search and track capabilities for the MG 13 FCS against low-flying targets. The most recognizable feature of the two-phased *Bold Journey* program was the addition of a semi-hemispheric infrared tracker in place of the retractable probe and drogue refueling boom located in the F-101B's nose. Some 339 aircraft were affected before the program ended, including 153 aircraft that became F-101F's following the update. Other modifications undertaken during the course of the F-101B's operational career included the addition of pneumatic starters for the engines; the addition of tail arrester hooks; corrections to the MB-5 Automatic Flight Control System; and the addition of TACAN navigation equipment.

A breakdown of F-101B variations and designators that resulted from the above, and other major update and modification programs include: F-101B (408 aircraft built to this standard); CF-101B (56 aircraft modified to this standard); TF-101B (72 aircraft built to this standard); F-101F (153 aircraft configured to this standard); CF-101F (10 aircraft modified to this standard); TF-101F (the number of aircraft specifically modified to this standard is unknown).

The F-101B's success in its respective mission is best illustrated by its success at the various William Tell interceptor training meets which are held approximately every two years at Tyndall AFB. The ADC F-101B's became part of the competition in 1961 and Canadian CF-101B's began participating in 1965. Winners in the F-101B category include: in 1961 (445th FIS); 1963 (445th FIS); 1965 (62nd FIS); 1970 (60th FIS); 1972 (178th FIS, ND ANG); 1974 (132nd FIS, ME ANG); 1976 (123rd FIS, OR ANG); 1978 (111th FIS, TX ANG); and 1980 (111th FIS, TX ANG). The F-101B's final showing at William Tell occurred in 1982 when the 409th and 425th squadrons sent *Voodoo's* to compete.

Phaseout of active duty F-101B's began in 1968. From March to the end of that year, ten squadrons, the 13th (in June); the 29th and 437th (in April); the 49th, 84th, and 87th (in July); the 98th (in August); and the 322nd, 444th and 445th (in September), were deactivated. The 322nd and 445th had been replaced by the 59th and 75th, respectively, but these too, were inactivated some 13 months later.

With the loss of 12 squadrons since the beginning of 1968, the ADC force level dropped to 3 squadrons. This level was maintained until March of 1971 when the 18th lost their F-101B's. Ultimately, in April of 1971, the last two F-101B ADC fighter-interceptor squadrons, the 60th and 62nd, completed the type's phaseout.

Attrition had been a major factor affecting the deployment of the F-101B force throughout its operational life. No new F-101B's were produced after 1961, this resulting in a continual decrease in the number of *Voodoo's* available to the ADC. To counter the attrition problem, the ADC grouped F-101B's in cells of six aircraft; a squadron was comprised of from one to four cells. At the end of 1961, only eight F-101B squadrons contained four cells. By August of 1964, the number of squadrons containing four cells had dropped to three.

In order to increase the number of F-101B's in certain squadrons, other squadrons were deactivated. On July 1, 1963, the 83rd became the first F-101B unit to suffer this fate. Its aircraft were disbursed to other squadrons, with a majority of the aircraft going to the 84th. The disbandment of the 15th, on December 24, 1964, was a direct result of F-102 squadrons being brought back from overseas under *Project Clearwater*. Under that project, the 16th, based at Naha AB, Okinawa, was to replace the 15th at Davis-Monthan. The program was revised so that the 16th would be deactivated and its F-102's transferred to the 15th. In actuality, the 15th's F-101B's were redistributed, the squadron was deactivated, and the 16th's F-102's remained in SEA.

Air National Guard units began receiving F-101B's in November of 1969. While in Guard service, the F-101B entered the golden age of its operational history. Stable operations in most ANG units were a result of smooth working personnel who were familiar with the aircraft and who had a vast wealth of experience on which to draw. Exemplifying this element was the ability of the 119th FIG to win the prestigious Hughes Trophy for air defense in 1974. This was a first in the history of the Air Guard.

A total of seven Air National Guard squadrons converted to the F-101B. In addition, a number of tactical reconnaissance squadrons flying the RF-101C also flew F-101F's for proficiency training. By the late 1970's, the number of ANG squadrons operating the F-101B had been cut to three. Throughout most of the time that the ANG operated the F-101B, the 147th FIG conducted courses to train ANG F-101B crews. This relieved the 2nd FITS of having to undertake similar duties. In addition to the training role, the 147th also provided an alert force in New Orleans on a permanent basis.

The 147th became the last Air Guard unit to remain active with the F-101B. On August 8, 1983, F-101F, 57-352, piloted by Maj. Nelson D. DeStaffany, departed the squadron for display in California, thus ending an operational ANG career that had spanned nearly fifteen years. Air Guard units that operated the F-101B were: 101st FIW (101st FIG, 132nd FIS), Bangor, Maine; 119th FIG (178th FIS), Fargo, North Dakota; 142nd FIW (141st FIG, 116th FIS), Spokane, Washington; 142nd FIG (123rd FIS), Portland, Oregon; 147th FIG (111th FIS), Ellington AFB, Texas; 148th FIG (179th FIS), Duluth, Minnesota; 107th FIG (136th FIS), Niagara Falls, New York.

Under TCTO 1F-101B-788 (Class V modification #2020), verified by contract on December 30, 1968, with the Martin Marietta Corporation, a number of ex-RCAF CF-101B's, which retained the flight-refueling probe of the early F-101B configuration, were modified as high/low, daylight reconnaissance aircraft under the RF-101B designator. Aircraft so modified gained the flying boom receptacle aerial refueling system, and had the number two fuselage fuel cell reduced to 433 gallons (dropping the fuel tankage in the RF-101B to 2,949 gallons). The RF-101B lacked all armament and fire control systems associated with the interceptor. The reconnaissance versions carried instead cameras and control equipment in a modified nose, and stowed additional communications and navigational gear in the weapons bay. Equipment carried in the nose included a KS-87B forward camera; a KS-87B left split vertical camera; a KS-87B right split vertical camera; an AXQ-2 forward looking television camera; and an AXQ-2 downward looking camera. Most controls in the rear cockpit were removed during the modification. The pilot's cockpit contained a TV viewfinder control indicator. Length of the RF-101B is the same as that for the standard F-101B (some sources, however, take into account the originally spec'd 2'2" difference in nose pitot tube lengths when giving overall RF-101B dimensions).

Originally, 30 aircraft were to be converted to RF-101B standards but at a later date, a decision to convert only 23 was made. Twenty-two of the 23 were eventually transferred to the Air Guard, and 1 aircraft was allocated to the AFLC (Air Force Logistics Command). All the Air Guard RF-101B's were delivered to the 192nd TRS at Reno, Nevada. Six years after the first RF-101B arrived, the squadron converted to the RF-4C and all RF-101B assets were retired.

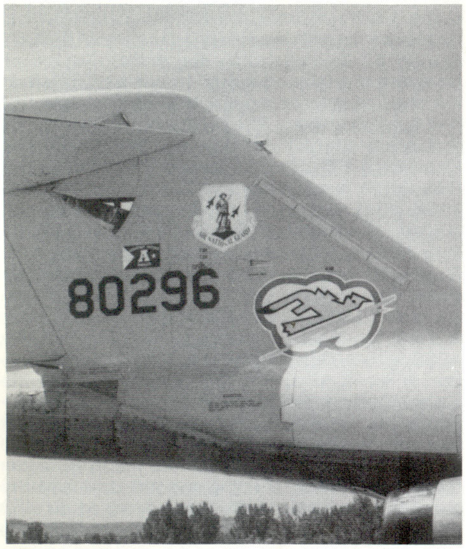
RCAF

On June 12, 1961, an agreement was reached between the US and Canadian governments calling for the transfer of 66 F-101 (56 F-101B and 10 F-101F) interceptors to the RCAF in return for Canada assuming responsibility for a number of *Pinetree* early warning radar sites. A third part of the agreement concerned Canadian participation in the F-104G production program. The 66 *Voodoo's*, were taken from Block 115 and 121 aircraft and assigned to the 84th FIS, the 87th FIS, and the 49th FIS. The Ogden Air Materiel Area worked closely with the RCAF to establish a viable logistics program which would take into account the inherent differences between the two services, as well as equipment/spare shortages already encountered by the USAF. A number of Canadian aircrews attended training at USAF bases, such as Hamilton AFB, to bring Canadian crews up on the *Voodoo* in the shortest possible time. Bristol Aero Industries was designated the Canadian civilian contractor for all RCAF CF-101B's.

The first CF-101B to be delivered to the RCAF was turned over at RCAF Uplands under the auspices of US Ambassador Livingston T. Merchant on November 13, 1961. Five squadrons then began to update to the CF-101B, these being the 410th at Uplands (Ottawa), the 409th at Comox (British Columbia), the 414th at Namao (Ontario), the 416th at Bagotville (Quebec), and the 425th at Chatham (N.B.). The June agreement also provided for 5 F-101B simulators and 28 spare engines.

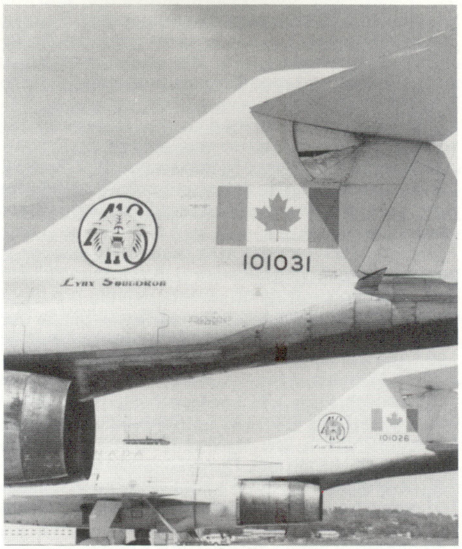
In October of 1962, the ADC received the first of several requests to transfer 22 more F-101B's to

SELECT TAIL MARKINGS:



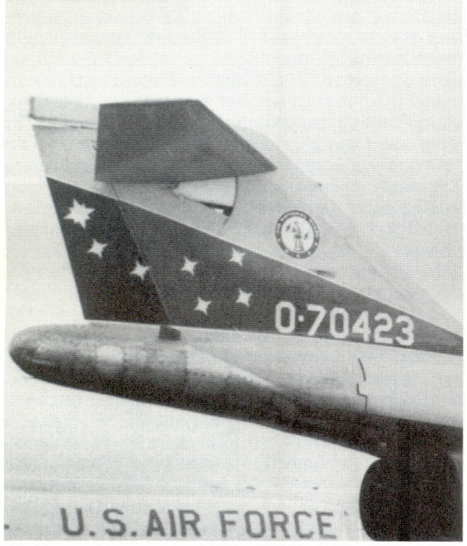
Tail markings of 136th FIS/197th FIG, NY ANG. Black outlined bird was red, lightning was yellow, and outline was blue.

George Cockle



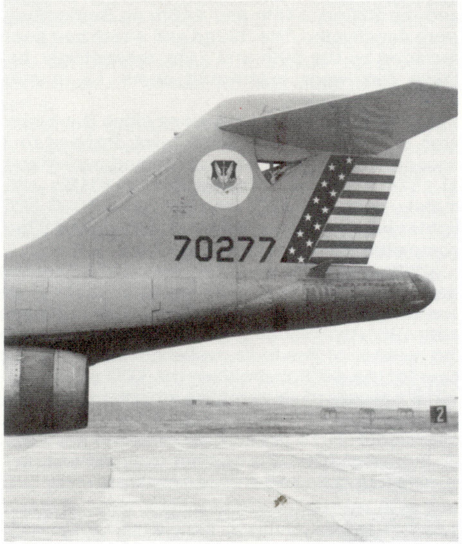
Tail markings of RCAF 416 Lynx Squadron, Chatham, Canada. Cougar is grey and white with red tongue and black detail.

George Cockle



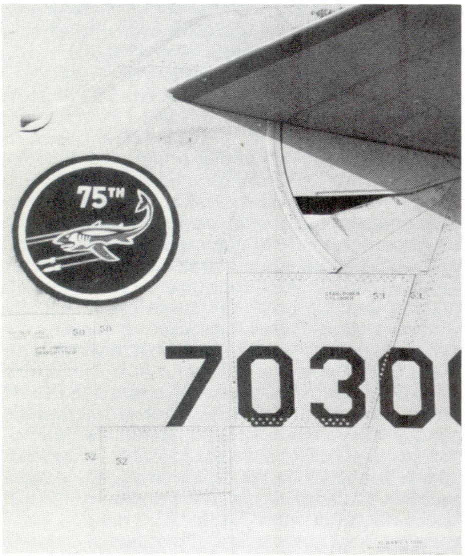
Tail markings of 179th FIS/148th FIG, MN, ANG. Fin marking was blue with white stars and serial number.

Doug Slowiak



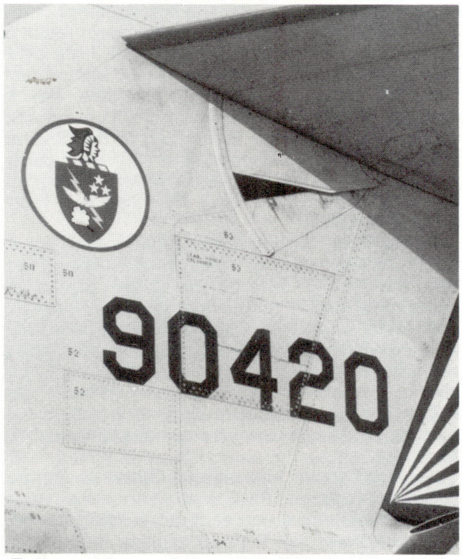
Tail markings of 2nd FITS/ADWC, Tyndall AFB, FL. Fin stripes were red and white. Fin bar was blue with white stars.

George Cockle



Tail markings of the 75th FIS, Dow AFB, ME. Shark was white, blue, and black, with yellow tipped rockets.

Kevin Keaveney collection



Tail markings of the 49th FIS, Griffiss AFB, NY. Helmet was b & w w/green feather/shield. Other markings: white and green.

Kevin Keaveney collection

Canada. This was turned down initially due to concern that Canadian *Voodoo's* lacked the nuclear armament of their American counterparts and would thus downgrade the nuclear capability of NORAD. By the end of 1964, this situation had been corrected and Canadian *Voodoo's* had become nuclear capable. By this time, however, the plan to acquire the additional aircraft had been dropped and Canadian CF-101 squadrons remained at three.

Once the most modern F-101B's in service, by late 1968, the Canadian aircraft were in actuality the least capable due to their having been deprived the modifications incorportated in USAF aircraft. Lacking such improvements as those given under the IIP, the Canadians sought to replace their *Voodoo's* with those being placed in storage by ADC squadrons. Under *Operation Peach Wings,* during a three year period from 1969 to 1971, 56 upgraded F-101B's were transferred to the RCAF and assigned to 409, 410, 416, and 425 Squadrons. The original Canadian CF-101's were then returned to the US for either storage at the MASDC, or conversion to RF-101B standard. At the time of this writing, the RCAF's CF-101B's are the last operational F-101's in the world. The recent initiation of CF-18A *Hornet* deliveries to the RCAF spells the demise of the F-101 in operational service. The last aircraft are now expected to be removed from the RCAF inventory in early 1985.

CONSTRUCTION AND SYSTEMS:

The F-101B is a two-place, supersonic, all-weather interceptor with variations optimized for training and foreign service roles. The primary construction materials are aluminum and steel, with small amounts of titanium used in high heat sink areas around the engines and exhaust nozzles.

The forward fuselage section consists of tandem fully pressurized and air conditioned cockpits situated under a single clam-shell-type plexiglas canopy (which is opened and closed by an electric motor driven actuator), avionics bays, the fire control system and its associated radar, and the nose landing gear. In dual control aircraft, no provisions are made for operating the landing gear, wing flaps, speed brakes, and the 16′ ring slot type drag chute, or to initiate or terminate afterburning or engine shutdown. In standard interceptor configured aircraft, the fire control radar is controlled by the radar intercept officer in the rear cockpit. The front cockpit instrument panel is heavily oriented toward aircraft flight instrumentation. The front cockpit left console contains fuel system controls, the landing gear actuation handle, the wing flaps actuation switch, the throttle quadrant, the optical sight, and other systems controls. The front cockpit right console contains the IFF and SIF controls, the air conditioning system controls, the oxygen system controls, and other related items. The rear cockpit left console contains the data link antenna selector, the fuel quantity gauge, the throttle quadrant, the missile preparation switches, and the circuit breaker panel. The rear cockpit right console contains the controls for the weapon system and oxygen system.

A 300 psi liquid oxygen system draws its oxygen from a 10 liter supply tank that is filled from an access door on the left side of the fuselage. A converter changes the liquid oxygen to a gaseous form.

Both crew members sit on adjustable McDonnell-designed ejection seats which are capable of performing throughout most of the F-101B's flight envelope. The seat will accommodate a back-type parachute and is equipped with an over land survival kit and a removable parachute support bulkhead. A seat-man separator is installed on each seat.

The F-101B features very thin, short, swept-back wings (leading edge sweep angle is approx. 43-deg.) with fixed ramp engine intakes at the roots, and similarly swept vertical and T-type horizontal tail surfaces. The wing is equipped with conventional ailerons and hydraulically operated, electrically controlled, zap type flaps. The horizontal stabilator is a single piece unit with irreversible hydraulic actuators. The vertical tail consists of a conventional vertical fin and rudder assembly. All control surfaces are powered by irreversible hydraulic actuators and are capable of providing desirable control effectiveness throughout the airplane's entire speed range while providing the pilot with an artificially simulated feel. All control surfaces are equipped with electrical trim systems. There is also a hydraulically actuated, electrically controlled yaw damper integrated into the rudder control system.

The wing flaps are hydraulically operated and electrically controlled. Hydraulically actuated panel type speed brakes are installed on the aft portion of each side of the aft fuselage and may be utilized at all speeds.

The tricycle landing gear is fully retractable and consists of a dual nose gear and single wheel main gear which are hydraulically actuated and electrically controlled. The main wheels retract inboard into the wings; the nose wheel retracts forward into a nose wheel well. When the landing gear is retracted, the wells are covered by flush doors. The gear is mechanically locked in both the retracted and extended positions. The main landing gear shock struts are of the conventional airoil type that are compressed when the landing gear is being retracted. The nose gear is steerable through hydraulic actuation. The anti-skid-equipped power brake system is operated from the utility hydraulic system, and incorporates segmented rotor type brakes which are mounted integrally with the main landing gear wheels. Two 600 watt, 115 volt ac lamps mounted on the nose gear strut and positioned when the gear is extended provide illumination during landing and taxiing. The left light is used for taxiing; the right light for landing. Conventional position lights are provided on the tail and on each wing tip. A fuselage light is located aft of the canopy on the centerline, and a light is located under the fuselage just forward of the engine intakes on each side. To aid in night intercept identification, some F-101B's and CF-101B's are equipped with an identification light flush mounted on the left side of the rear cockpit. It is mounted to project its beam perpendicular to the vertical axis and 15-degrees forward of the lateral axis of the airplane.

A drag chute, located in a small storage compartment at the extreme end of the empennage, is available for deceleration following landing. A tailhook is provided for emergency use during landing and takeoff.

The MG-13 fire control system permits firing of miscellaneous variants of the AIR-2 *Genie* and/or AIM-4 *Falcon* air-to-air missiles. The AIR-2, usually carried in groups of two, is normally armed with a nuclear warhead and weighs 837.7 pounds. The AIM-4, also carried in groups of two, is normally armed with a conventional warhead and weighs 133 pounds. The armament is carried on a rotary door on the underside of the fuselage just aft of the nose gear well. The rotary door can store two AIR-2A's in the internal bay and two AIM-4's externally.

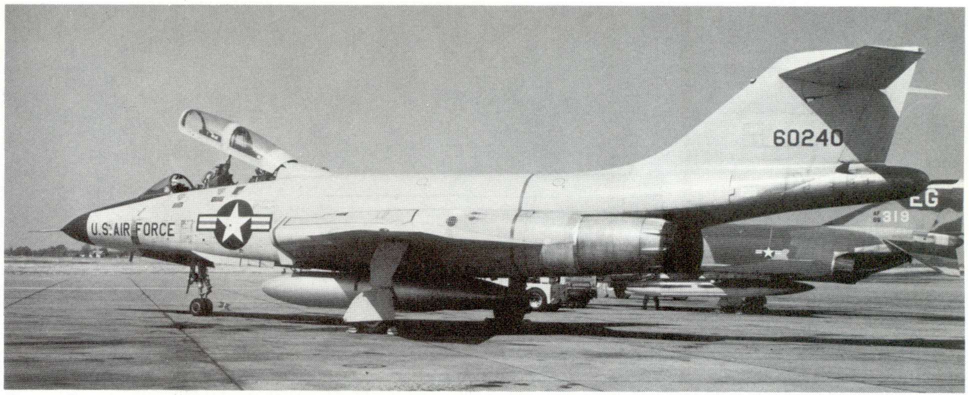
The primary AC electrical power for the F-101B is 200/115 volt, three-phase, 400 cycle, alternating current. It is supplied by two 30,000 volt-ampere generators operating in parallel, one driven by each engine. The generators become operative at approximately 30% engine rpm. The primary DC electrical power for the F-101B is provided by two transformer-rectifiers which receive 200 volt, three-phase, 400 cycle ac and supply 28 volt dc. The units, each capable of delivering 100 amps, are connected in parallel and either can supply all the dc power required.

Hydraulic power is supplied by two completely separate systems; a primary and a utility system, each with an operating pressure of 3,000 psi. Each system has two pumps, one driven by the right engine and one by the left.

The RF-101B differs from conventional F-101B's in being equipped with a special optical sensor nose. The camera complement replaces the armament and fire control systems of the interceptor version. The electrical and some instrumentation have been changed to accommodate the needs of the aircraft in the reconnaissance role.

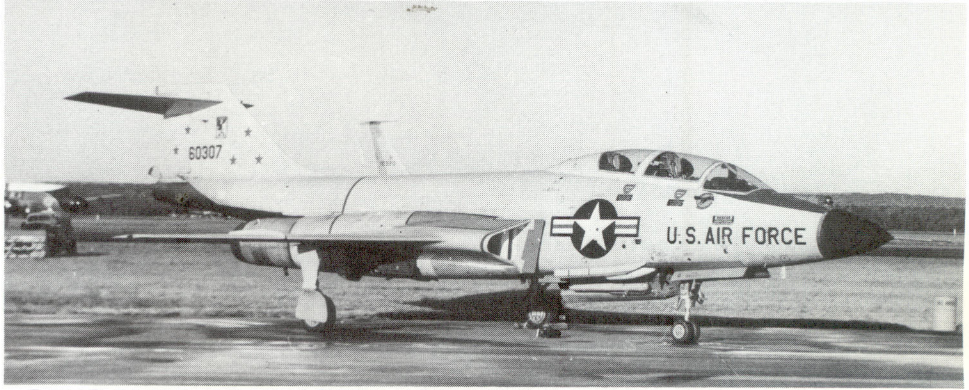
The RF-101B's cameras are located in three separate stations. The forward oblique station has one KS-87B camera, the vertical station contains a

F-101B/F OVERVIEW



Doug Olson

F-101B, 56-240 is seen transient at McClellan AFB, California during September of 1970. It is noteworthy that this airplane was equipped with the late, extended exhaust pipes, but the early configuration exhaust nozzles. Also note flush cooling intakes for aft engine bay.



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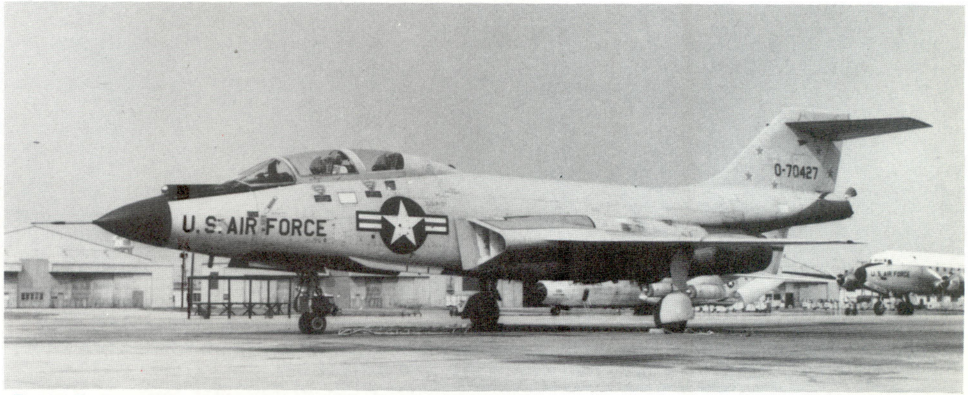
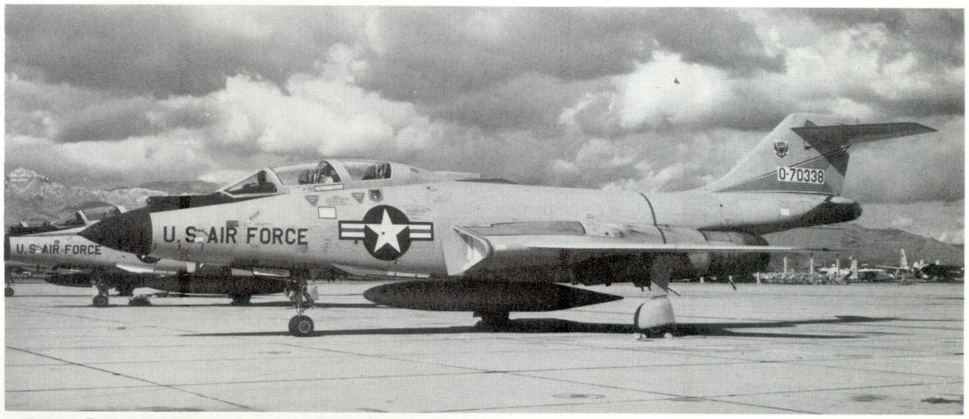
F-101B, 56-307, of the 2nd FIS/52nd FW, Suffolk County Airport, New York. Vertical fin stars were blue and outlined in white. Weapons bay contained a single AIR-2 and an unidentified pod.



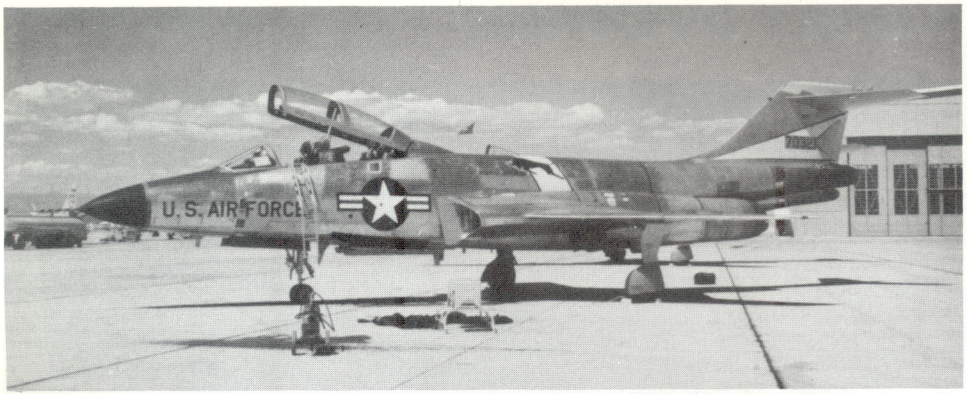
Robert Esposito via Dave Menard

F-101B, 57-427, also of the 2nd FIS/52nd FW, lacking unit markings on the vertical fin and nose. Photo was taken at Suffolk County Airport, New York.



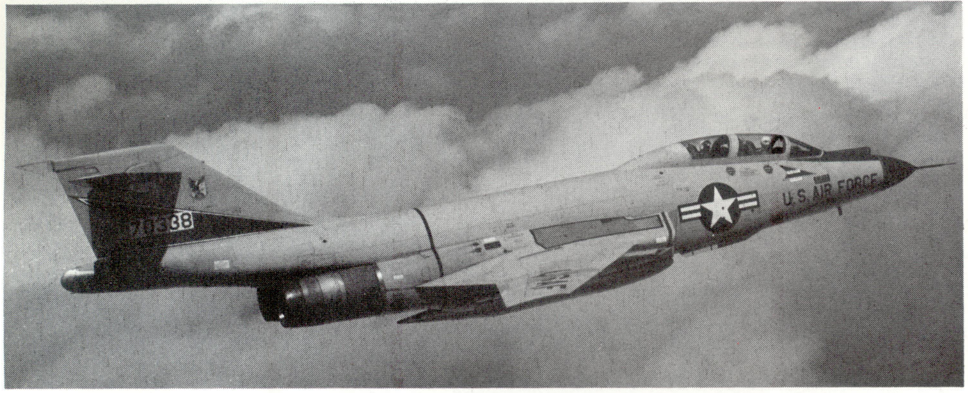
Doug Olson via Rene' Francillon

F-101F, 57-338, of the 13th FIS, Glasgow AFB, Montana, during a transient stop at Davis Monthan AFB, Arizona in March of 1968. Tail flash was orange with a black and white border. Unit badge had an orange shield and scroll with black and white details.



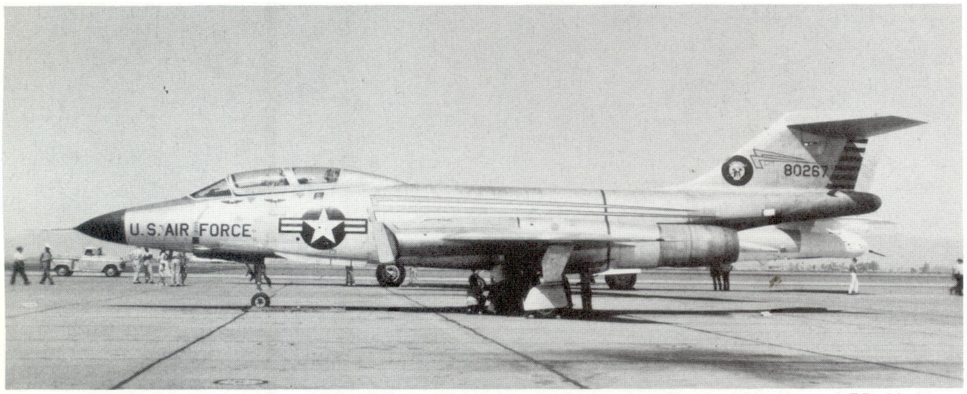
Norm Taylor via Marty Isham

1960 markings of the 13th FIS on F-101B, 57-321. Flash and fuselage stripe were orange with black edging. Vertical fin cap was light grey. The bull and forward fuselage strakes were black. The pitot tube was spiraled black and the i.d. light was outlined in yellow.



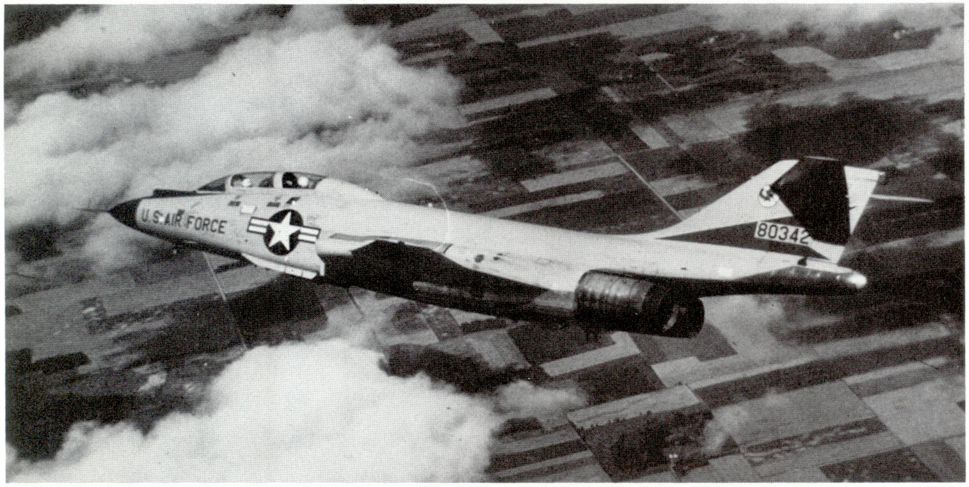
USAF via Marty Isham

F-101B, 57-338, during participation in the "Sooner Boomer" sonic boom studies during the summer of 1964. Fin flash, nose flash, and wingtip flashes were all orange.



Brian Baker

F-101B, 58-267, of the 15th FIS during an open house at Davis-Monthan AFB. Unit badge consisted of a light turquoise blue disc with turquoise border, a white skull, a red cane tipped with white, and a black hat.



Marty Isham collection

F-101B, 58-342, of the 18th FIS, Grand Forks AFB, North Dakota. Fin flash was blue with a dark yellow outline. Unit badge consisted of a dark yellow disc with white clouds, a black machine gun, a blue fox, and red lightning.

KA-56B panoramic camera and two TV cameras, and the left and right split vertical stations each contain KS-87B cameras mounted at convergent angles to provide a fixed-degree film overlap. The camera control system furnishes single-point control over the camera equipment either manually or automatically. The camera controls are mounted on the left console in the cockpit. The camera operation limits range from a minimum altitude of 250 feet at 600 knots IAS to the maximum altitude and airspeed capability of the airplane.

Standard equipment found in the F-101B includes the following: AN/APX-72 transponder set, marker beacon, AN/ARC-34 UHF radio, ADF, AN/ARN-21 TACAN navigation radio, localizer, ILS, windshield defrost/defog, AN/AIC-10 intercom, AN/ARN-31 glide slope and localizer receiver system, AN/ARN-32 marker beacon receiver, and an AN/APX-25 identification radar (SIF/IFF).

POWERPLANT:

The F-101B and its variants are all powered either by the Pratt and Whitney J57-P-55 (most block 55 thru 80 aircraft) or J57-P-53 (most block 40 thru 55 aircraft) turbojet engines. These engines are equipped with afterburners and are mounted side by side in the aft lower portion of the center fuselage. The rated sea level static thrust of the J57-P-55 engine is approximately 10,700 lbs. at Mil. power (6,350 rpm), and approximately 16,900 lbs. in full a/b (6,400 rpm). The J57-P-53 produces approximately 10,200 lbs. thrust at Mil. power, and approximately 16,000 lbs. in full a/b.

Basically, the J57 consists of a 16-stage, two-unit compressor, a combustion chamber comprising 8 annularly disposed units or cans, served by a dual fuel manifold; a three-stage turbine; and the afterburner. The compressor is made up of a nine-stage, low-speed, low-pressure unit, driven by the combined second and third stages of the turbine. The low-speed compressor unit powers an accessory drive at the front of the engine, and the high speed compressor powers the accessory group beneath the center portion of the engine. A bleed valve is installed to prevent compressor stalls during acceleration and deceleration at any altitude. Afterburner ignition is accomplished by means of a "hot streak" igniter which injects a charge of fuel into the number 3 combustion chamber, causing a temporary overrich condition, which produces flame streak through the turbine and into the afterburner fuel spray. The exhaust nozzle is of the two position convergent/divergent type.

Length of the J57-P-55 is 251.34", and width is 40.50". Dry weight is 5,215 lbs.

Each engine employs a dry sump pressure-type oil system supplied from a 7.1 U.S. gallon tank attached to the left side of each engine. The tank has a fully serviced capacity of 5.5 gallons. Oil flows from the tank to a gear-type pump which it supplies under pressure to the lubrication joints.

The F-101B's JP-4/5 fuel supply is contained in five bladder-type cells within the fuselage and three bladder cells in each wing. The fuselage cells are numbered 1 thru 5 from forward to aft. Cell number 1 is actually two separate cells which are assembled as one. The fuel supply can be increased by mounting two 450 gallon droppable external tanks on the fuselage. The fuel supply system can be serviced in flight by the probe and drogue method, and on the ground by a single point pressure system. Aircraft with the infrared seeker head installed have no inflight refueling capability. Normal fuel transfer within the fuselage tank system is accomplished by fuel transfer pumps. Fuel transfer from the wing tanks and external tanks depends on air pressure from the engine compressor. Pneumatic starters, which require an external source of compressed air, are installed on each engine. The engines can also be combustion started using compressed air.

SERIAL AND BLOCK NUMBERS:

Allocated USAF serial and block numbers assigned the F-101B and its derivitives are as follows (note: F-101F identifies an F-101B equipped with dual controls; block number identification of F-101F's will end in 1 or 6, such as 51 or 56 — these special block numbers are indicated by parenthesis; there were a total of 398 standard F-101B's and 72 dual control F-101B's built; some dual control F-101B's and F-101F's were also referred to as TF-101B's and TF-101F's):

F-101B-30-MC:	**56-232**
F-101B-40-MC:	**56-233/56-237**
F-101B-45-MC:	**56-238/56-240**
F-101B-50-MC:	**56-241/56-243**
F-101F-(51)-MC:	**56-244/56-245**
F-101B-55-MC:	**56-248/56-250**
F-101F-(56)-MC:	**56-246/56-247**
F-101B-60-MC:	**56-251/56-252; 56-254/56-257**
F-101F-(61)-MC:	**56-253**
F-101B-65-MC:	**56-258/56-259; 56-261; 56-263/56-268**
F-101F-(66)-MC:	**56-260; 56-262**
F-101B-70-MC:	**56-269/56-273; 56-278/56-280**
F-101F-(71)-MC:	**56-274/56-277**
F-101B-75-MC:	**56-281/56-288; 56-290/56-293; 56-295/56-298**
F-101F-(76)-MC:	**56-289; 56-294; 56-299**
F-101B-80-MC:	**56-300/56-303; 56-305/56-307; 56-309/56-311; 56-313/56-315; 56-317/56-319; 56-321/56-323; 56-325/56-327; 57-247/57-262**
F-101F-(81)-MC:	**56-304; 56-308; 56-312; 56-316; 56-320; 56-324; 56-328**
F-101B-85-MC:	**57-264/57-266; 57-268/57-270; 57-272/57-274; 57-276/57-278; 57-280/57-282; 57-284/57-286; 57-288/57-291; 57-293/57-296; 57-298/57-301; 57-303/57-306**
F-101F-(86)-MC:	**57-263; 57-267; 57-271; 57-275; 57-279; 57-283; 57-287; 57-292; 57-297; 57-302; 57-307**
F-101B-90-MC:	**57-308/57-311; 57-313/57-316; 57-318/57-321; 57-323/57-326; 57-328/57-331; 57-333/57-336; 57-338/57-341; 57-343/57-346; 57-348/57-351; 57-353/57-356**
F-101F-(91)-MC:	**57-312; 57-317; 57-322; 57-327; 57-332; 57-337; 57-342; 57-347; 57-352; 57-357**
F-101B-95-MC:	**57-358/57-364; 57-366/57-371; 57-373/57-378; 57-380/57-385; 57-387/57-392; 57-394/57-399; 57-401/57-406**
F-101F-(96)-MC:	**57-365; 57-372; 57-379; 57-386; 57-393; 57-400; 57-407**
F-101B-100-MC:	**57-408/57-413; 57-415/57-420; 57-422/57-427; 57-429/57-448; 57-450/57-452**
F-101F-(101)-MC:	**57-414; 57-421; 57-428; 57-449**
F-101B-105-MC:	**58-259/58-261; 58-263/58-268; 58-270/58-275; 58-277/58-282; 58-284/58-289; 58-291/58-296; 58-298/58-303**
F-101F-(106)-MC:	**58-262; 58-269; 58-276; 58-283; 58-290; 58-297**
F-101B-110-MC:	**58-305/58-310; 58-312/58-317; 58-319/58-323; 58-325/58-330; 58-332/58-337; 58-339/58-342**
F-101F-(111)-MC:	**58-304; 58-311; 58-318; 58-324; 58-331; 58-338**
F-101B-115-MC:	**59-391/59-392; 59-394/59-399; 59-401/59-406; 59-408/59-412; 59-414/59-418; 59-420/59-424; 59-426/59-436; 59-438/59-440**
F-101F-(116)-MC:	**59-393; 59-400; 59-407; 59-413; 59-419; 59-425; 59-437**
F-101B-120-MC:	**59-441/59-442; 59-444/59-448; 59-450/59-453; 59-455/59-459; 59-461/59-465; 59-467/59-471; 59-473/59-477; 59-479/59-483**
F-101F-(121)-MC:	**59-443; 59-449; 59-454; 59-460; 59-466; 59-472; 59-478**

Canadian Serial Numbers (Canadian aircraft include CF-101B's and CF-101F's; numbers in parenthesis are USAF serials assigned prior to delivery): **17391 (59-391), 17392 (59-392), 17393 (57-393), 17394 (59-394), 17395 (59-395), 17396 (59-396), 17397 (59-397), 17398 (59-398), 17399 (59-399), 17400 (59-400), 17401 (59-401), 17402 (59-402), 17403 (59-403), 17404 (59-404), 17405 (59-405), 17406 (56-406), 17407 (59-407), 17408 (59-408), 17409 (59-409), 17410 (59-410), 17411 (59-411), 17433 (59-433), 17434 (59-434), 17435 (59-435), 17436 (59-436), 17437 (59-437), 17438 (59-438), 17439 (59-439), 17440 (59-440), 17441 (59-441), 17442 (59-442), 17443 (59-443), 17444 (59-444), 17445 (59-445), 17446 (59-446), 17447 (59-447), 17448 (59-448), 17449 (59-449), 17450 (59-450), 17451 (59-451), 17452 (59-452), 17453 (59-453), 17455 (59-455), 17456 (59-456), 17457 (59-457), 17459 (59-459), 17460 (59-460), 17461 (59-461), 17463 (59-463), 17464 (59-464), 17466 (59-466), 17467 (59-467), 17468 (59-468), 17469 (59-469), 17470 (59-470), 17471 (59-471), 17472 (59-472), 17475 (59-475), 17476 (59-476), 17477 (59-477), 17478 (59-478), 17479 (59-479), 17480 (59-480), 17481 (59-481), 17482 (59-492), 17483 (59-483), 101001/101018 (?), 101019 (57-314), 101020/101023 (?), 101025/101048 (?), 101049 (57-395), 101050 (57-396), 101051 (57-398), 101052 (57-400), 101053 (57-418), 101054 (57-420), 101055 (57-424), 101056 (57-426), 101057 (57-429), 101058 (57-431), 101059 (57-432), 101060 (57-433), 101061 (57-434), 101062 (57-441), 101063 (57-442), 101064 (57-443), 101065 (57-444), 101066 (57-451)**

F-101B SPECIFICATIONS AND PERFORMANCE:

Span	39'8"
Overall length (pitot to empennage tip)	71'1" (F-101B) 68'4" (RF-101B)
Fuselage length	66'6"
Height	18'0"
Gross wing area	368 sq.
Operating weight empty	28,970 lbs.
Basic T-O weight	45,664 lbs.
Maximum T-O weight	52,350 lbs.
Wing loading	124.1 lbs./sq.'
Power loading	1.4 lbs./lbs. st.
Max. speed	1,134 mph/ 35,000'
Max. speed at sea level	.82 Mach
Combat ceiling, ft.	44,000'
Time to 40,000'	3 min. 15 sec.
Ferry range, naut. miles	1,675 mi.
Maximum unrefuelled endurance	3 hrs. 55 min.

AVAILABLE SCALE MODELS AND DECALS:

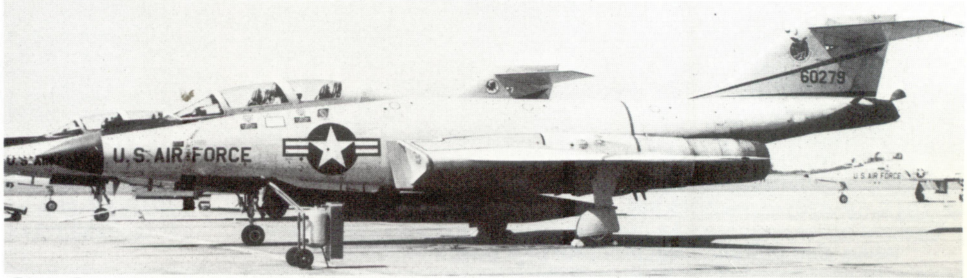
The following is a complete listing of all known F-101B/F plastic kits and decals:

Kits

1/136th scale: **Aurora, Commando Jemsa, Dulcerama Damel** (exact F-101 type unknown)
1/109th scale: **Monogram**
1/80th scale: **YMC** (exact F-101 type unknown)
1/77th scale: **Nitto** (exact F-101 type unknown)
1/72nd scale: **Matchbox**
1/48th scale: **Monogram** (planned 1985 release)
? scale: **Sanwa/Tokyo Plamo** (exact F-101 type unknown)

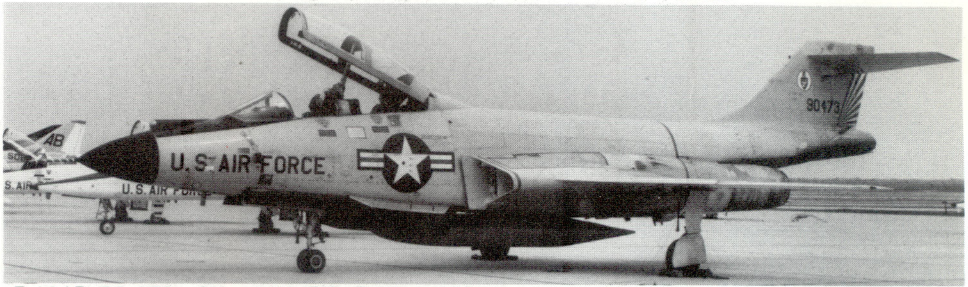
Decals

Micro-Scale: 1/72—72-304, 72-306, 72-307, 72-0407
Flight Colors: 1/72nd—572, 7-72
Aero: 1/72nd



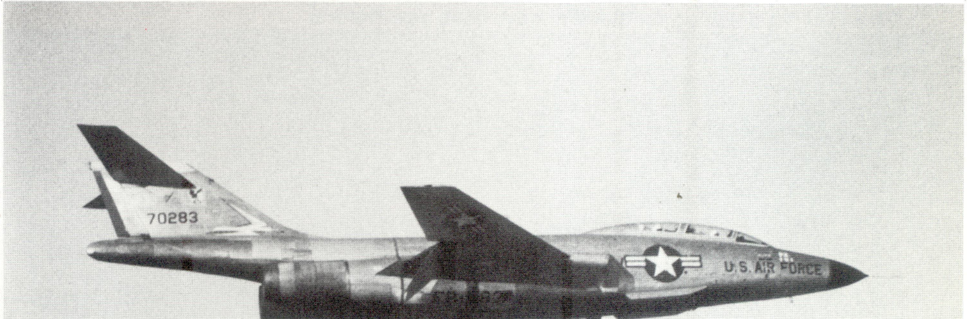
Kevin Keaveney collection

F-101B, 56-279, of the 29th FIS, Malstrom AFB, Montana. Fin flash was yellow with a black border. Unit badge consisted of a blue disc bordered in yellow, a brown cock with yellow beak, legs, and eye, and a red comb and wattles.



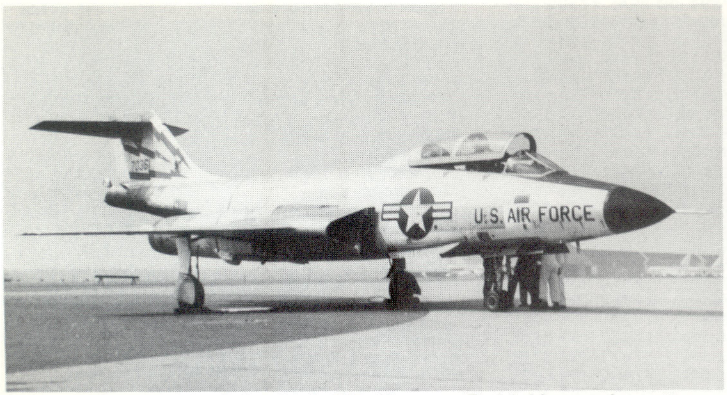
Aerofax, Inc. collection

F-101B, 59-473, of the 49th FIS, Griffiss AFB, New York. Rudder markings were green and white. The unit badge consisted of a black helmet, a green and white feather, a green shield, a white and green wreath, and white stars, wings, and cloud.



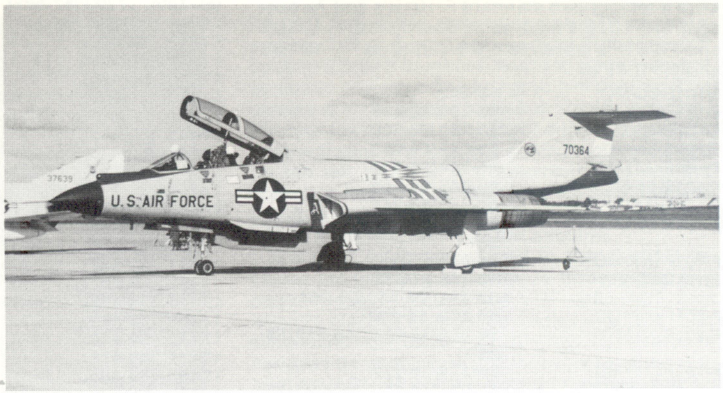
Cloud 9 Photography via Rene' Francillon

F-101F, 57-283, of the 322nd FIS, Kingsley Field, Oregon. The eagle design on the vertical fin, was black, with white stars, a blue-green eagle body, and white and gold wings. It was also used on 59th FIS aircraft.



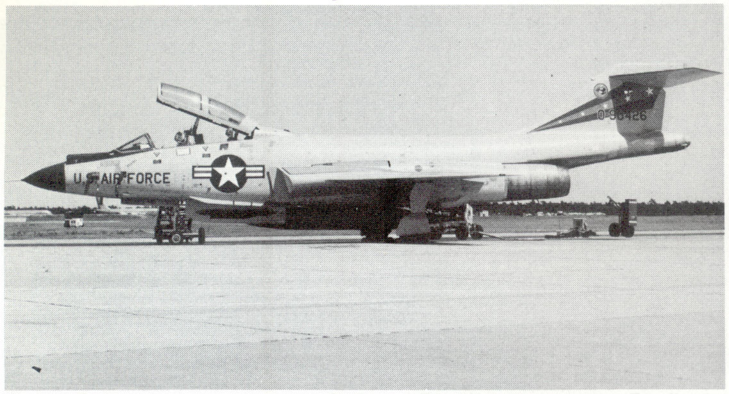
F-101B, 57-361, of the 60th FIS, Hanson Field, Massachusetts. Bolts on vertical fin were red and anti-glare panel on nose was dark green.

Kevin Keaveney collection



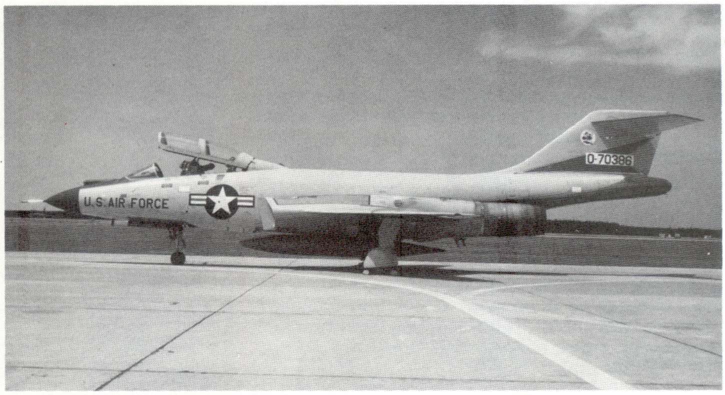
F-101B, 57-364, also of the 60th FIS, Hanson Field, Massachusetts. Red bolts on vertical fin had been removed. Fuselage markings were blue. See bottom 60th photo for unit badge description.

Kevin Keaveney collection



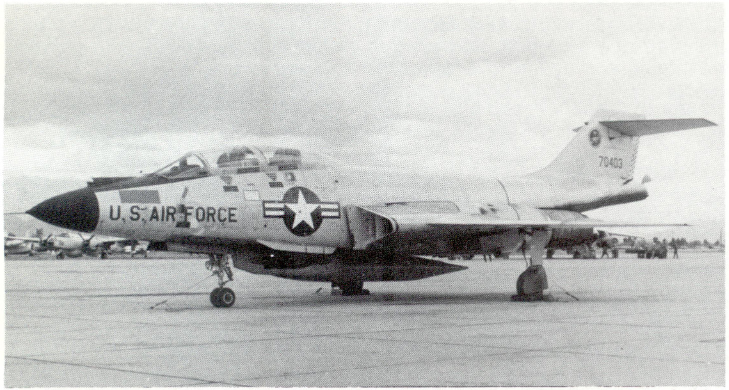
F-101F, 59-426, of the 60th FIS, Otis AFB, Massachusetts. Fin flash had red outer panels and a medium blue inner panel. Stars were white. See bottom 60th photo for unit badge description.

Jim Sullivan via Peter Mancus via Rene' Francillon



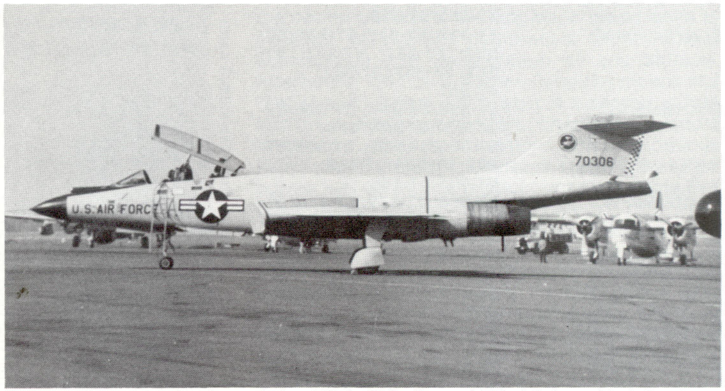
F-101F, 57-386, of the 62nd FIS, K. I. Sawyer AFB, Michigan. Tail flash was red with a white outline and black trim.

Doug Olson via Rene' Francillon



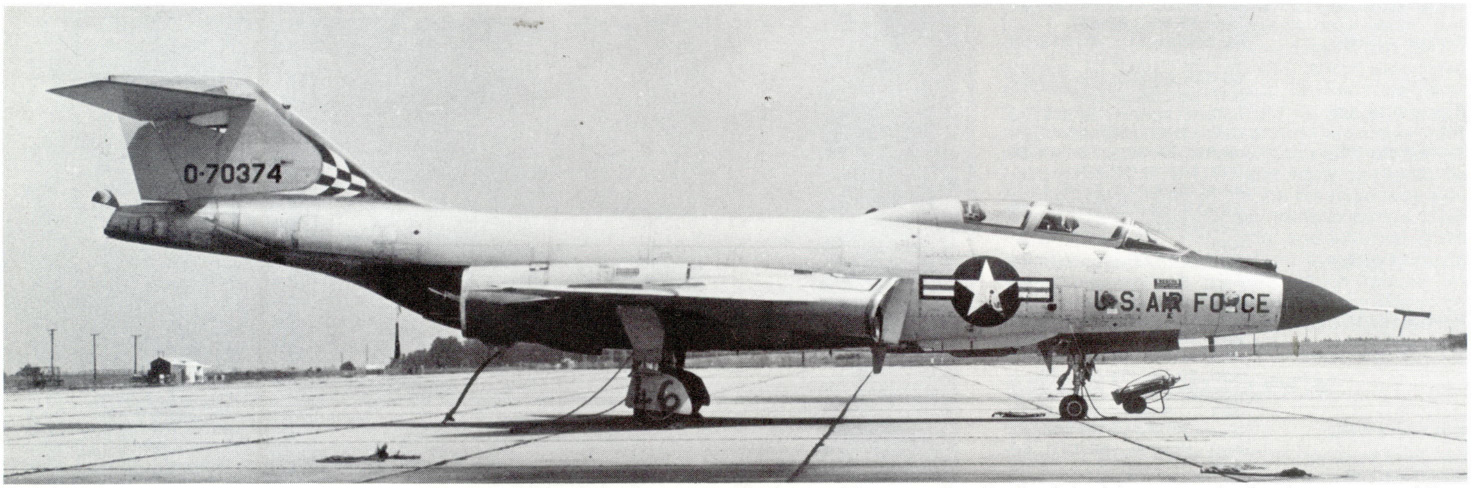
F-101B, 57-403, of the 7th FIS, Dow AFB, Maine. Rudder has black and white checkers. Some aircraft had black and white checkers on fin cap.

Aerofax, Inc. collection



F-101B, 57-306, also of the 75th FIS, Dow AFB, Maine. Unit badge on vertical fin is described on p. 6.

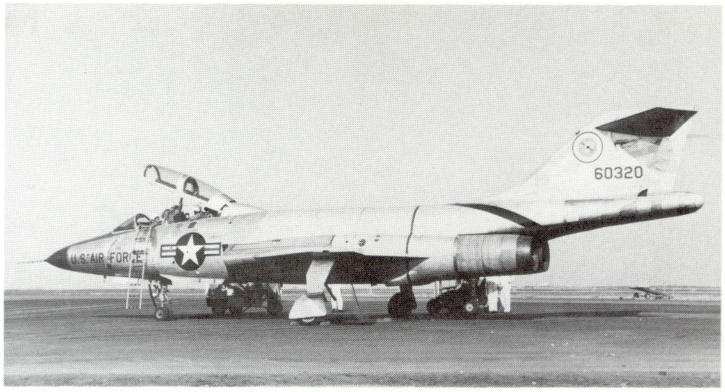
Kevin Keaveney collection



F-101F, 57-374, of the 60th FIS, Otis AFB, Massachusetts. Large fin flash was blue; smaller fin flash inside was red; checkers were white and dark blue. Unit badge consisted of a blue-green disc with black border and a black crow with yellow feet, beak, and tie, a blue helmet with white goggles, a blue and white vest, and a red machine gun.

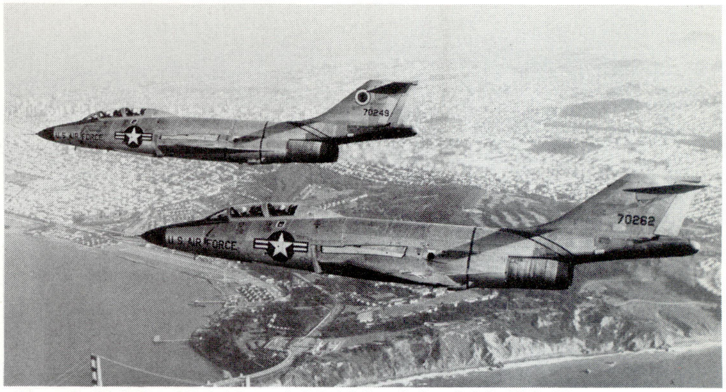
Jim Sullivan via Peter Mancus via Rene' Francillon

William Larkins via Paul Stevens via Rene' Francillon



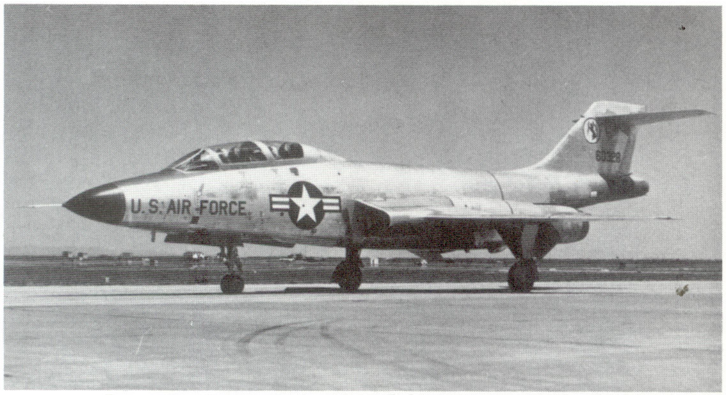
F-101F, 56-320, of the 83rd FIS (possibly loaned from the 84th FIS), Hamilton AFB, California. Fuselage band was blue. This aircraft was totalled at Tyndall AFB on 5-22-67.

Marty Isham collection



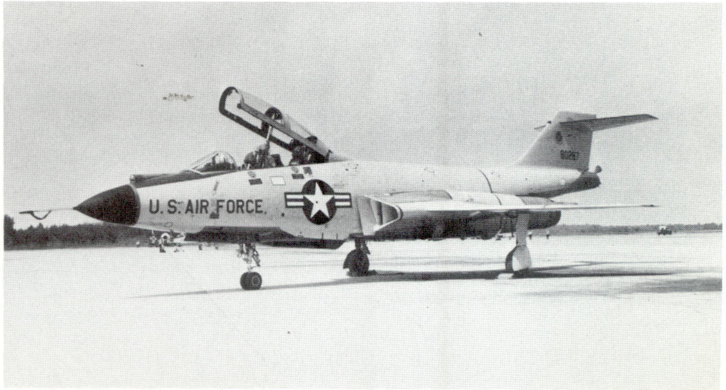
Two F-101B's, 57-249 and 57-262, of the 84th FIS, Hamilton AFB, California. Fuselage band was golden yellow with a black outline. F-101B, 57-249, was lost on 6-28-62.

Robert Dorr collection via Marty Isham



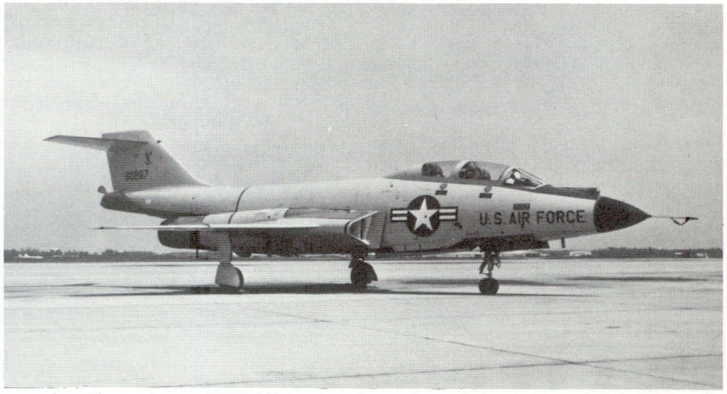
F-101F, 56-328, also of the 84th FIS, Hamilton AFB, California. Squadron badge was a golden yellow disc with a black panther holding two red lightning bolts.

Carson Seely via Dave Menard via Rene' Francillon



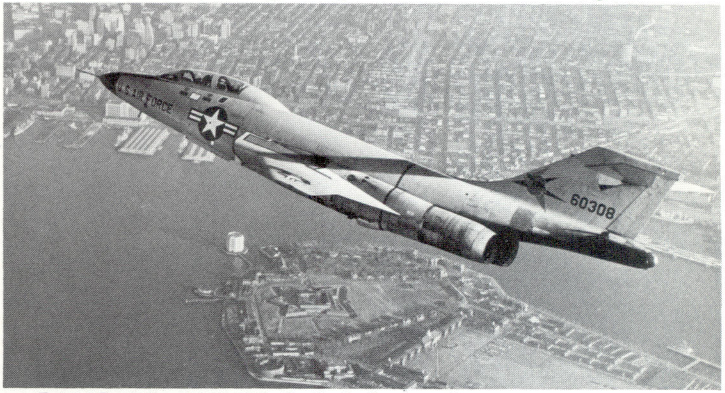
F-101B, 56-287, of the 87th FIS, Lockbourne AFB, Ohio. Unit badge on vertical fin had black planes on grey background with white stars, cloud, and lightning. Wreath underneath is gold.

Carson Seely via Dave Menard via Rene' Francillon



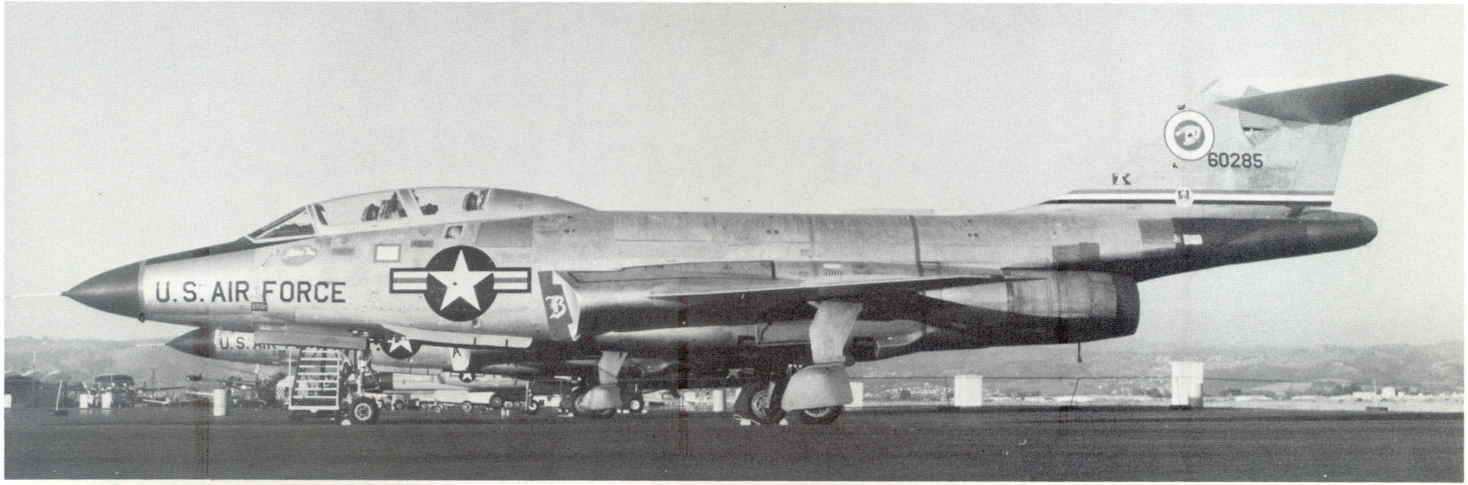
Another view of 56-287, showing aircraft from the right side. Painted nose gear and weapons bay area was somewhat unusual. Color was unrecorded.

Marty Isham collection

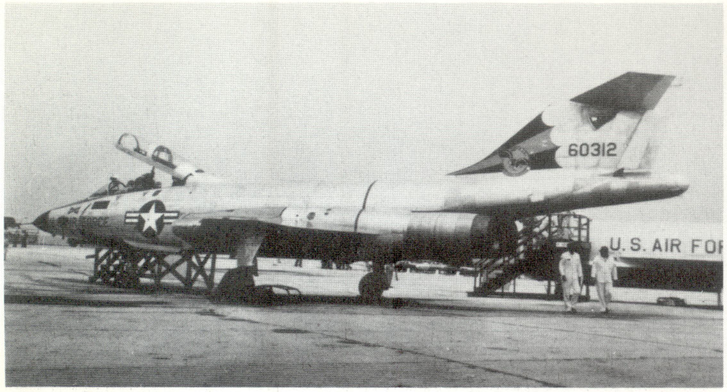


F-101F of the 98th FIS, Suffolk County Airport, New York. Unit badge consisted of a black falcon on a reddish orange disc. This aircraft was destroyed in a mid-air collision on 12/12/66.

Doug Olson via Pete Lewis

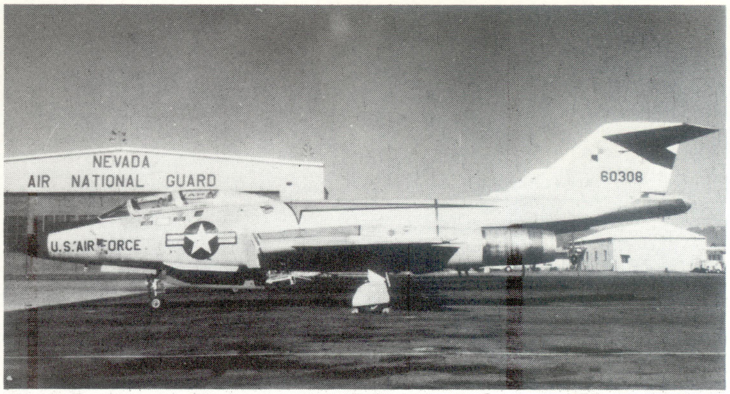


F-101B, 56-285, of the 83rd FIS, Hamilton AFB, California. Vertical fin band was red (top), white, and blue. Unit badge consisted of a black and white ace of spades, a yellow horseshoe, and a red lightning bolt on a disc of ultramarine blue. Disc was superimposed on another disc of white with blue outline. Splitter plate in intake was red.



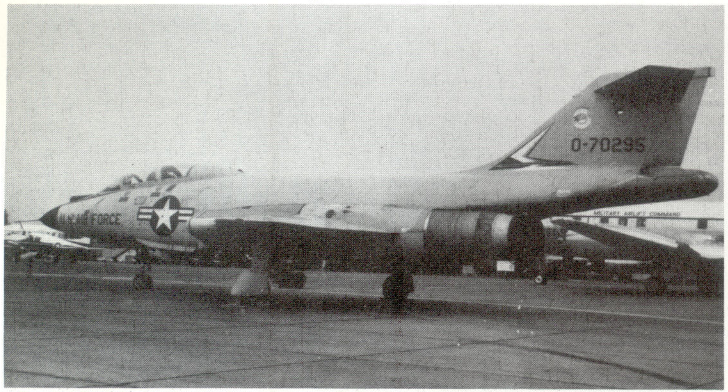
F-101F, 56-312, of the 98th FIS, Suffolk County Airport, New York. Scalloped flash consisted of black outer panels and a reddish orange inner panel.

Paul Stevens via Marty Isham



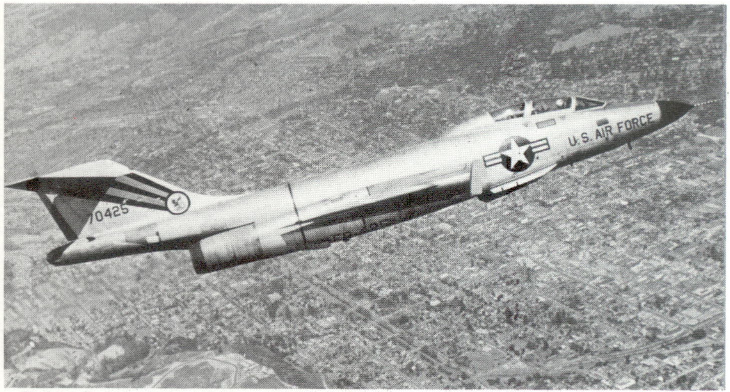
F-101F, 56-308, also of the 98th FIS, Suffolk County AFB, New York. Fuselage markings are unrecorded, but thought to be red with a black outline.

Frank MacSorley via Marty Isham



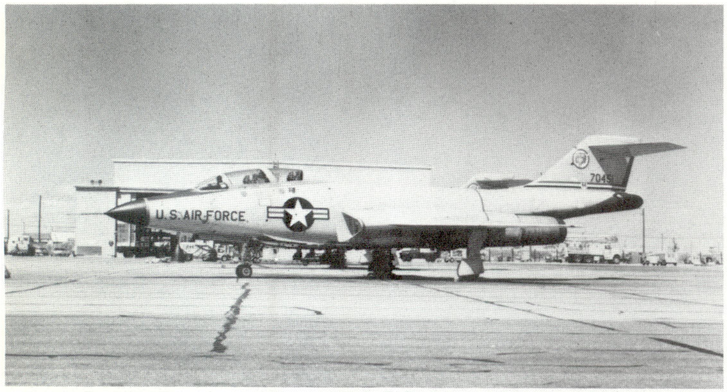
F-101B, 57-295, of the 322nd FIS, Kingsley Field, Oregon. Stylized eagle on vertical fin had blue-green body, and white and gold wings on a black flash.

Doug Olson via Paul Stevens via Marty Isham



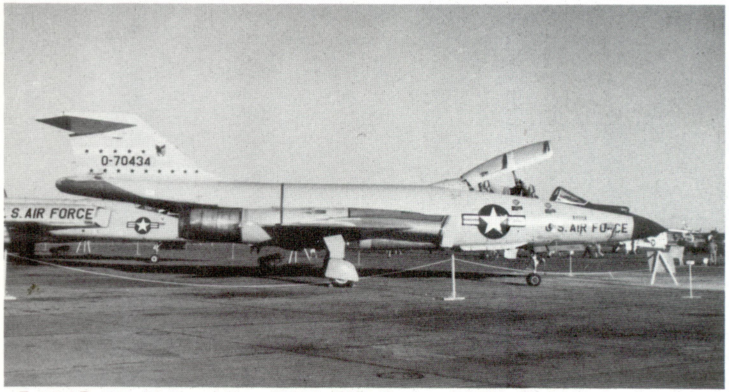
F-101B, 57-425, of the 437th FIS, Oxnard AFB, California. Fin flash was black and gold. Anti-glare panel was dark green. Rudder trim was red. This aircraft was destroyed on 11-15-62.

Marty Isham collection



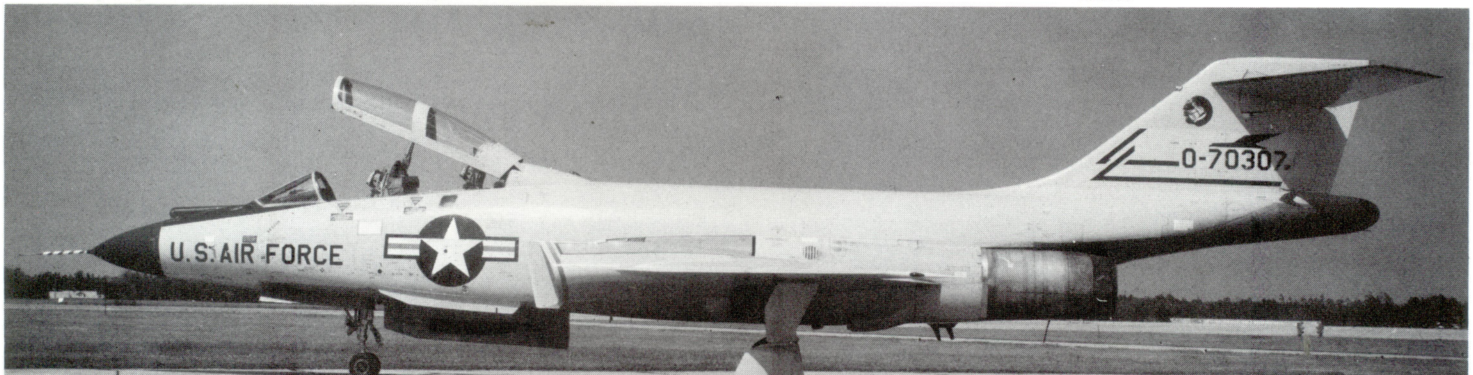
F-101B, 57-451, also of the 437th FIS. Vertical fin bands were red (top), white, and blue. Unit badge on vertical fin consisted of white, light green trimmed disc with a tiger in natural colors.

Marty Isham



F-101B, 57-434 of the 437th FIS, Oxnard AFB, California. Aircraft was photographed at Dover AFB. Tail bands were yellow with black stars.

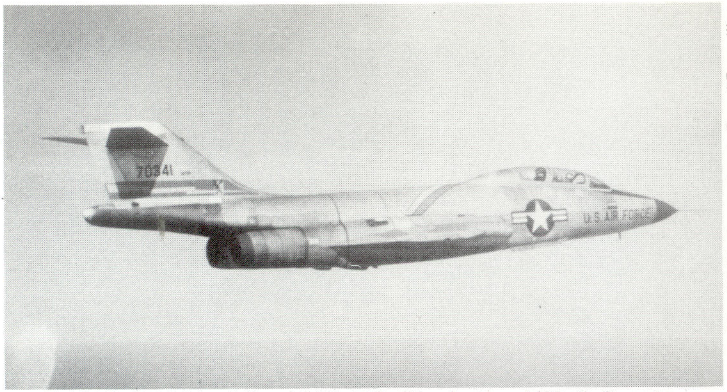
Brian Baker via Dave Menard via Rene' Francillon



F-101F, 57-307, of the 445th FIS, Wurtsmith AFB, Michigan. Tail markings consisted of a large yellow gold band with black checks and bird. Unit badge consisted of a dark blue disc, a gold bell, a red sword, yellow flame, and brown wood. Anti-glare panel was dark green. Intake warning stripe was red. Rotated weapons pallet is visible.

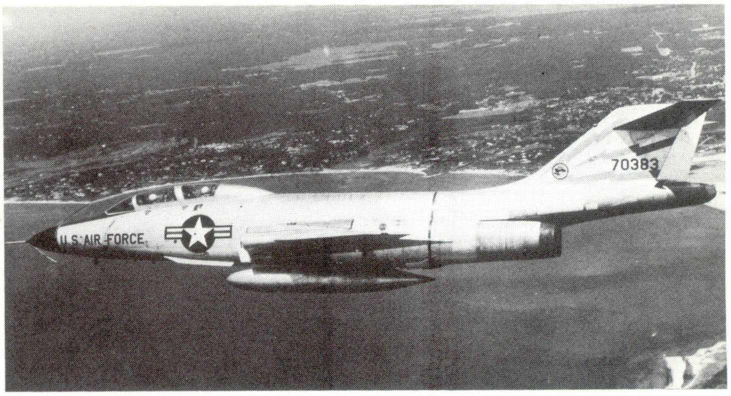
Doug Olson via Rene 'Francillon

Bill Curry via Marty Isham



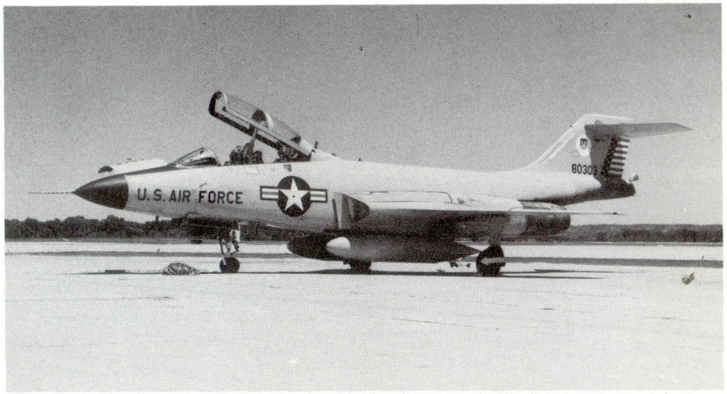
F-101B, 57-341, of the 444th FIS, Charleston AFB, S. Carolina. Fuselage band was yellow (forward) and green. Vertical fin band was green with a yellow lightning bolt and yellow trim.

Cloud 9 Photography via Rene' Francillon



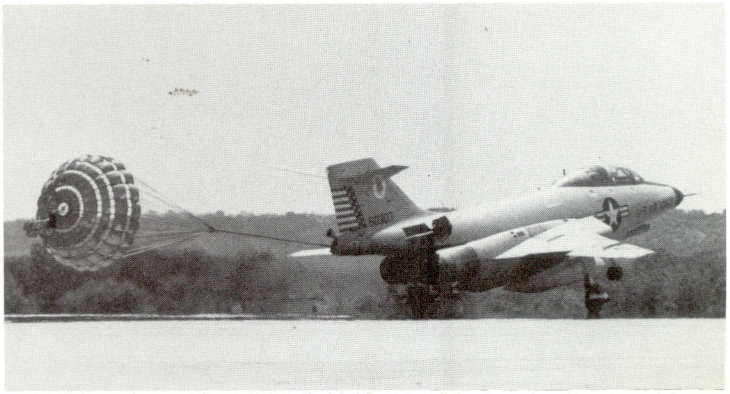
F-101B, 57-383, of the 60th FIS, Otis AFB, Massachusetts. Lightning bolts on vertical fin were red as was intake splitter plate.

George Cockle



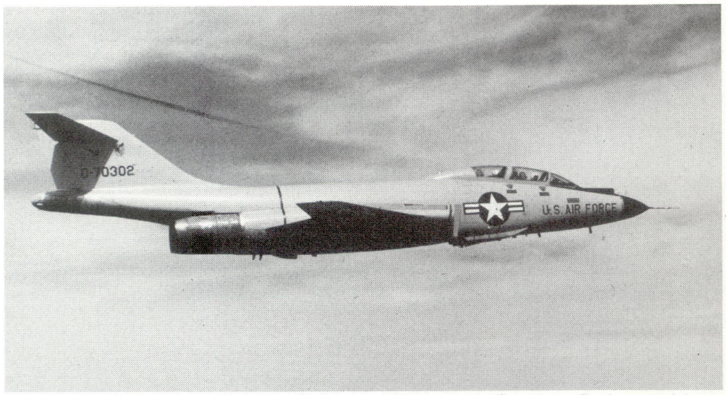
F-101B, 58-303, of the 2nd FITS, Tyndall AFB, Florida. Rudder stripes were red and white. Vertical bar just ahead of rudder was blue with white stars.

George Cockle



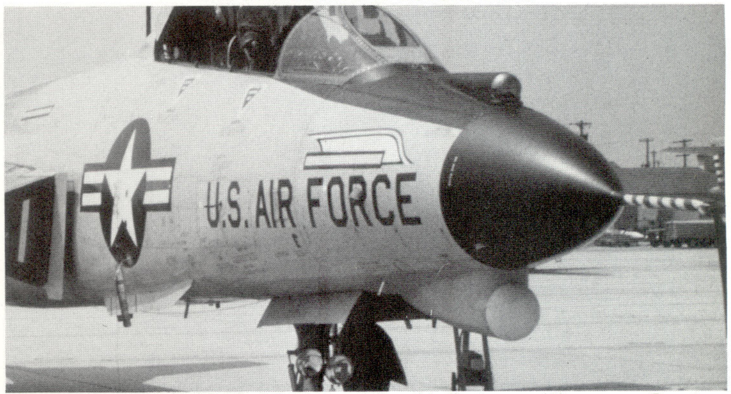
Another view of 2nd FITS F-101B, 58-303, shortly after touching down at Offutt AFB, Nebraska. High nose angle increased drag and thus contributed to deceleration.

USAF via Marty Isham



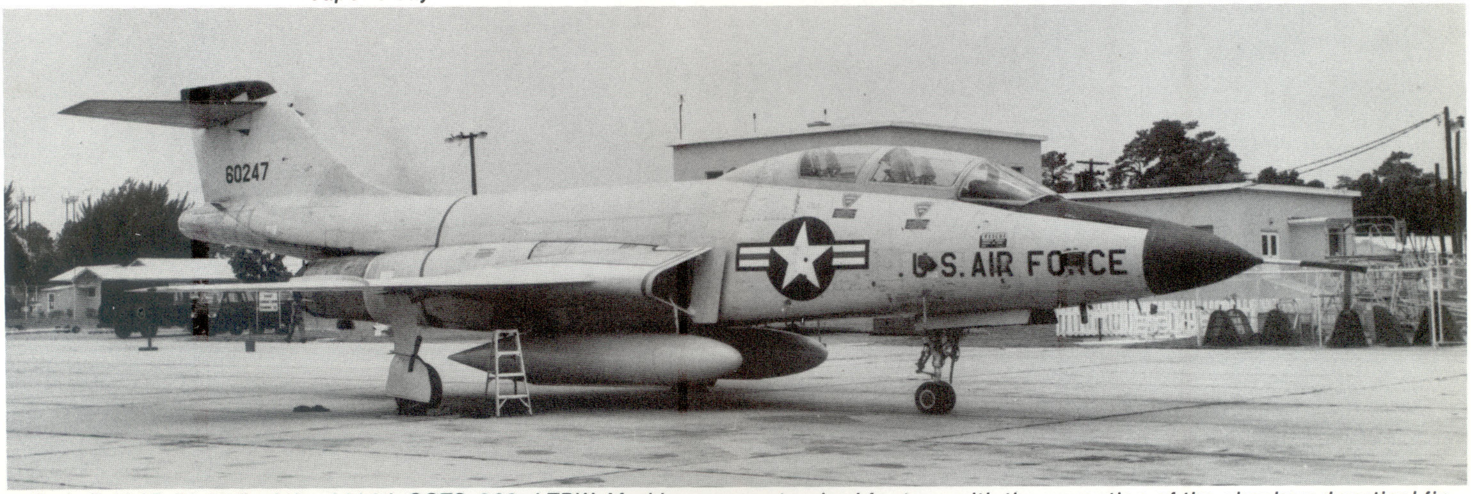
F-101F, 57-302, of the Air Defense Weapons Center. Only marking was ADC badge on vertical fin. Aircraft was carrying two AIM-4's in weapons bay.

Norm Taylor

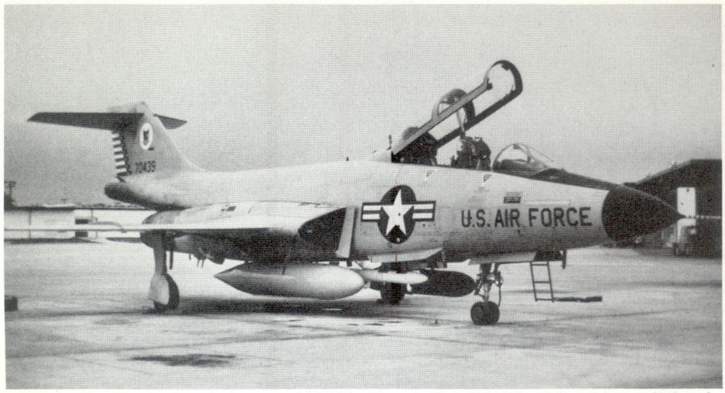


Nose detail of F-101B, 57-272, of the Air Defense Weapons Center with unusual ventral nose sensor. Some sources indicate this to have been a "Pave Penny" laser sensing unit.

Norm Taylor via Dave Menard

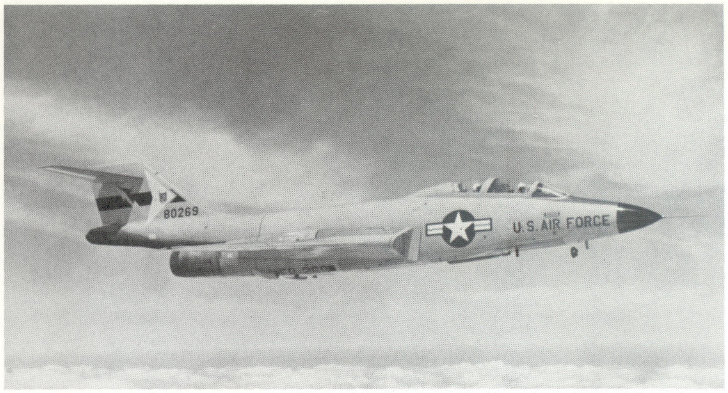


Early F-101F, 56-247, of the 4414th CCTS, 363rd TRW. Markings were standard for type with the exception of the ckeckered vertical fin cap. Colors of the latter are uncertain but thought to be orange and black.



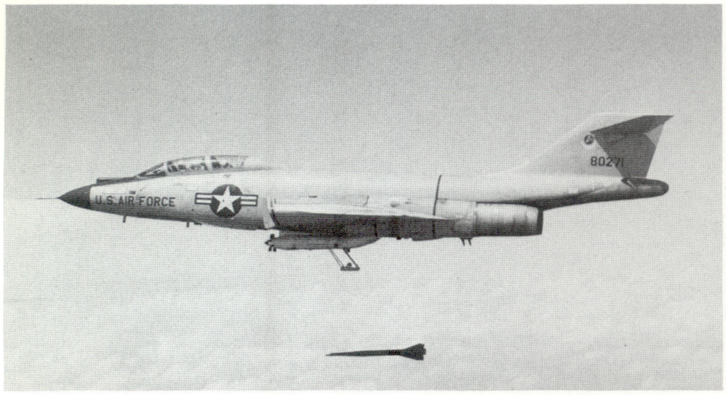
Jay Miller/Aerofax, Inc.

F-101B, 57-439, of the 2nd FITS, Tyndall AFB, Florida. Aircraft had ALQ-72 ECM pod and ALE-2 chaff pod mounted under weapons bay.



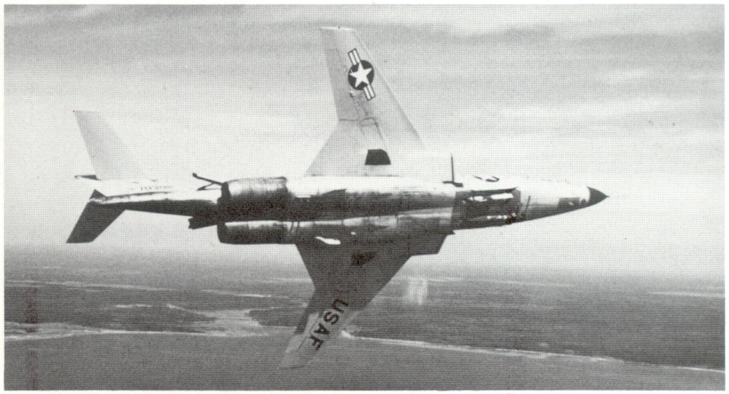
USAF via Marty Isham

F-101F, 58-269, of the 4756th ADGp/73AD, Tyndall AFB, Florida. Vertical fin markings consisted of a black band, a yellow bolt, a white delta with yellow forward trim, and an ADC badge.



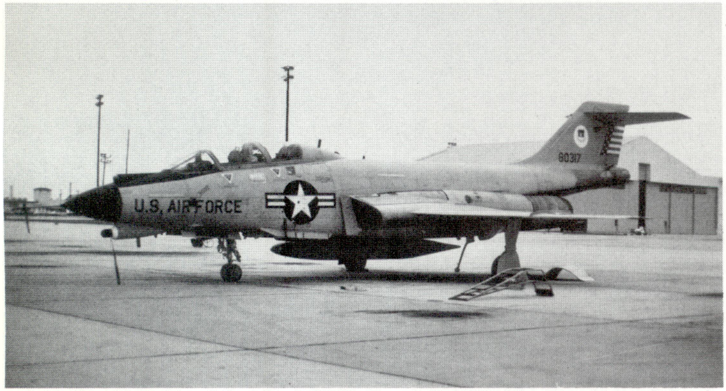
Marty Isham collection.

F-101B, 58-271, also of the 4756th ADGp, Tyndall AFB, Florida. Aircraft mounted target dart equipment. Dart is deployed and wind generator vanes are in feathered position.



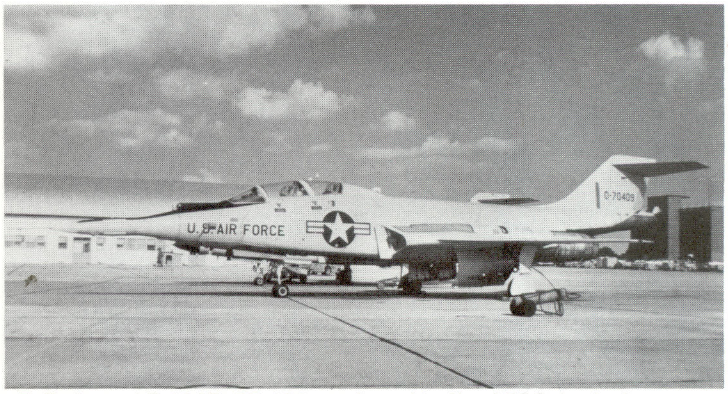
USAF via Marty Isham

F-101B, 57-302, of the Air Defense Weapons Center, mounting a single AIM-4 and an unidentified test pod. Note partially extended airbrakes and black-painted wheel well doors.



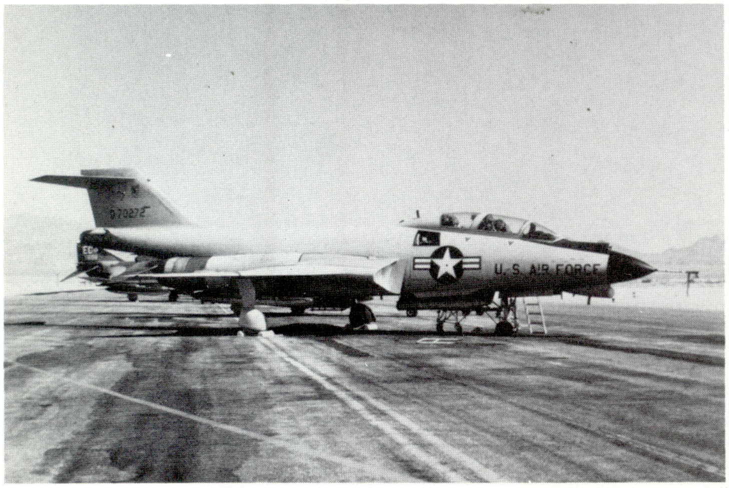
Jay Miller/Aerofax, Inc.

F-101B, 58-317, of the 2nd FITS, Tyndall AFB. Florida. Aircraft had an unusual dorsal nose pod equipped with F-15-dedicated forward looking sensors.



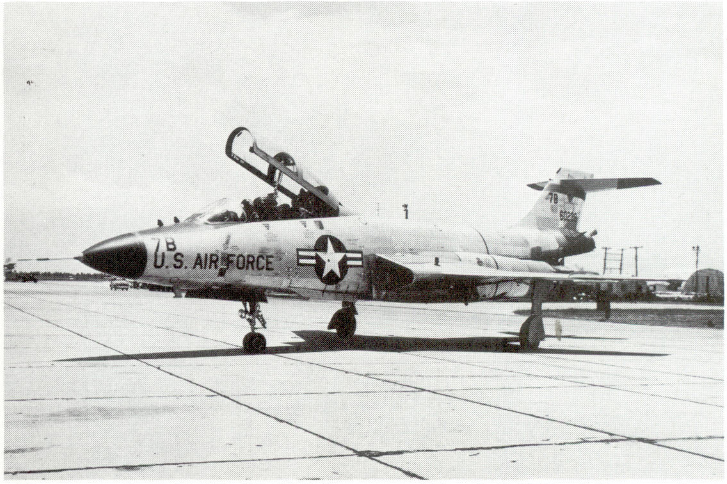
Marty Isham collection

Eglin-based F-101B, 57-409, assigned to the AFSC, had what must be the most bizarre nose modification ever seen on an F-101. Purpose of this 1969 modification remains unidentified.



Dennis Jenkins

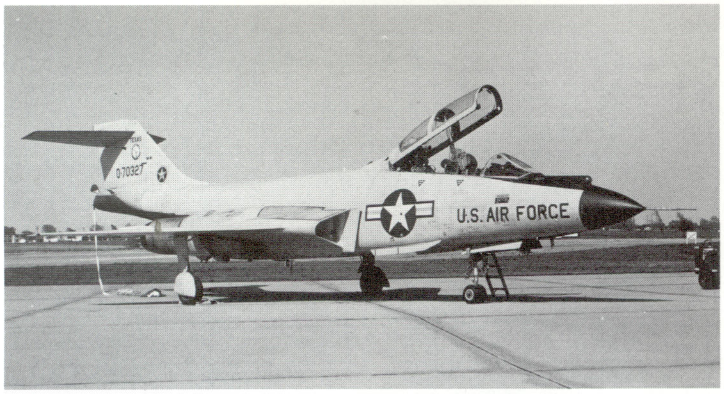
Another view of AFSC-assigned F-101B, 57-272, with the unusual dorsal nose sensor. Aircraft is seen during test work at Nellis AFB.



Marty Isham collection

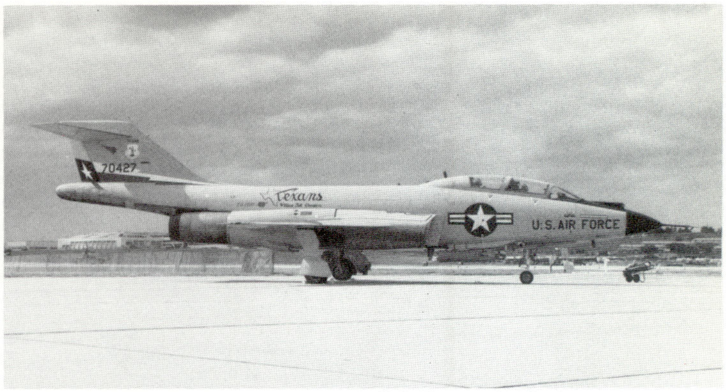
The seventh F-101B, 56-238, is seen at Tyndall AFB while carrying unusual sensors on nose and intake duct. Cameras can also be seen mounted on wingtip. Note early engine aft cooling intakes.

Aerofax, Inc. collection



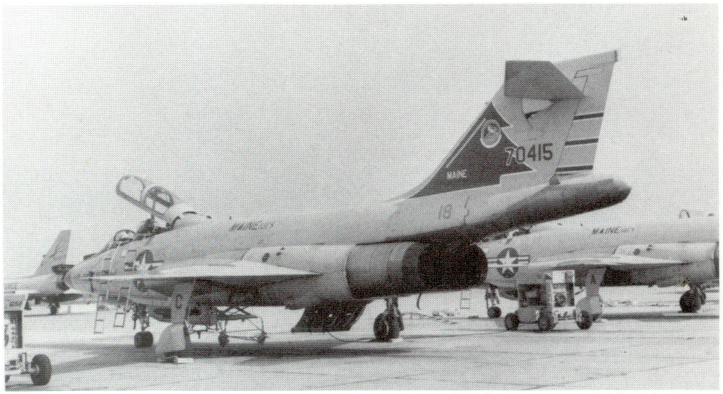
F-101F, 57-327, of the 111th FIS, Texas ANG, Ellington AFB, Texas. Aircraft is seen in early TANG markings.

George Cockle



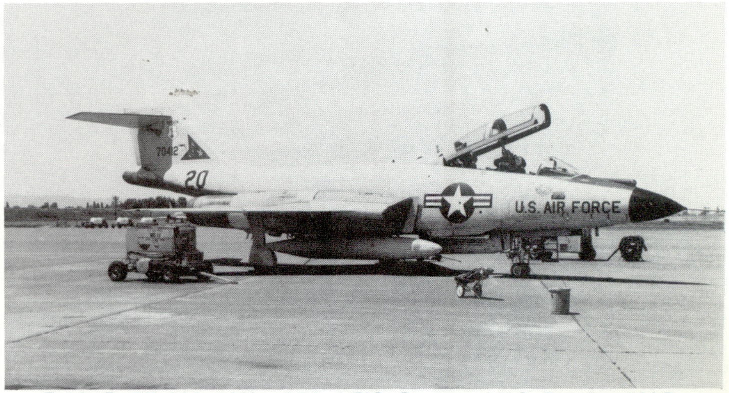
F-101B, 57-427, also of the 111th FIS, Texas ANG. Aircraft is seen in late TANG markings with "Texans" logo on fuselage and red, white, and blue Texas flag (bolt) on vertical fin.

George Cockle collection



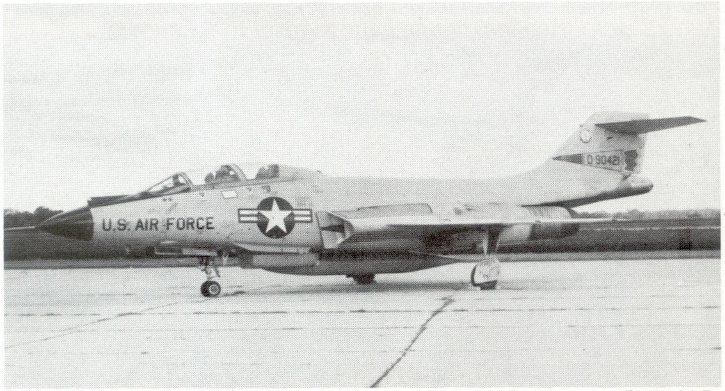
F-101B, 57-415, of the 132nd FIS, Maine ANG, Bangor IAP, Maine. Stylized tree on vertical fin and bars on rudder were dark green outlined in white.

Aerofax, Inc. collection



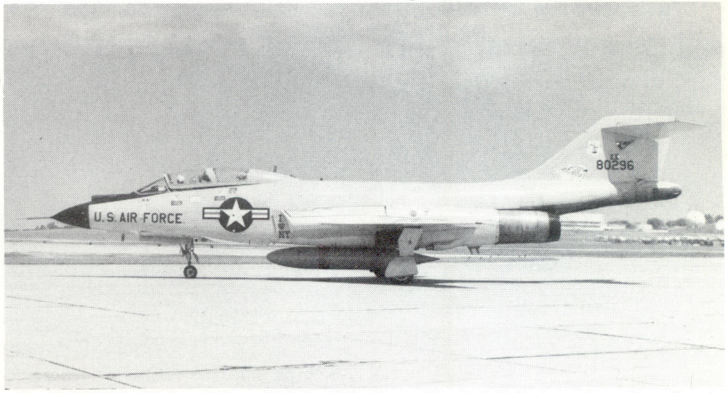
F-101B, 57-412, of the 123rd FIS, Oregon ANG, Portland IAP, Oregon. Fin markings consisted of a dark green delta with white outline and tan stars. Empennage number was black.

Kevin Keaveney collection



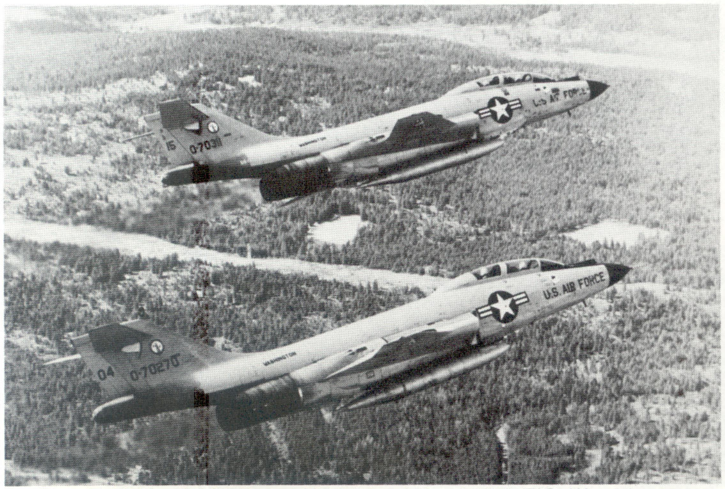
F-101B, 59-421, of the 136th FIS, New York ANG, Niagara Falls IAP, New York. Stylized eagle had red head, yellow middle, and black aft section. Note intake and gear door art.

George Cockle



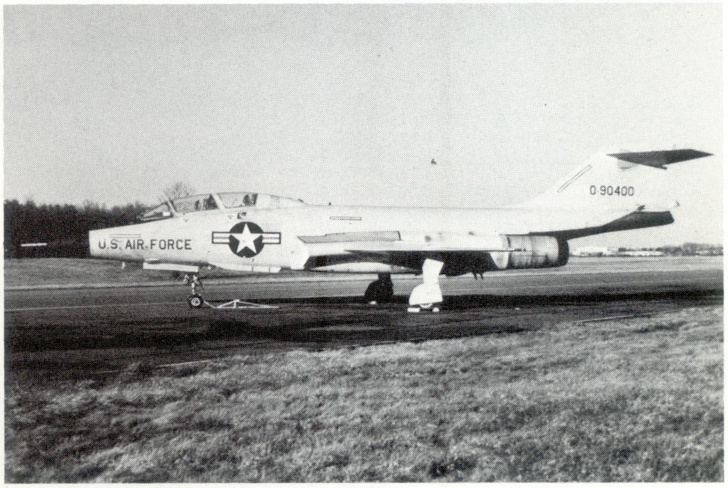
F-101B, 58-296, of the 136th FIS, New York ANG, bearing the final markings of this unit as an F-101 operator. Stylized bird on vertical fin was red with a blue outline and a yellow lightning bolt.

Rene' Francillon collection

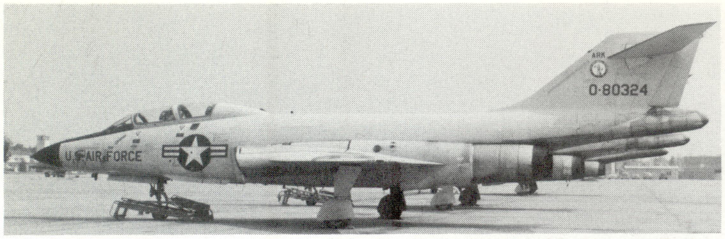


Two F-101's, 57-270 and 57-311, of the 116th FIS, Washington ANG, Spokane IAP, Washington, practice formation maneuvers somewhere over Washington state. Note "ace of spades" under windscreen.

Marty Isham

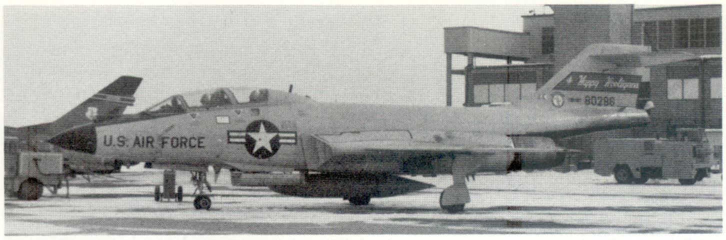


F-101B, 59-400, of the 165th TRS, Kentucky ANG, was used for reconnaissance training by the unit. Photo was taken at Andrews AFB.



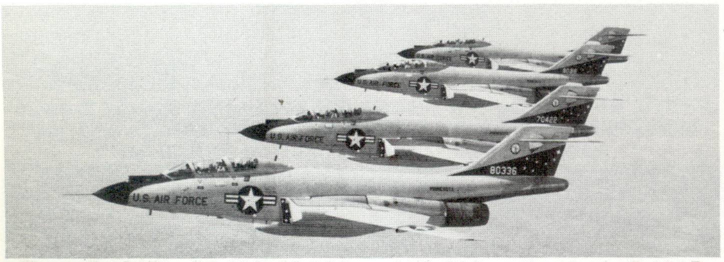
F-101B, 58-286, of the 178th FIS, North Dakota ANG, Hestor Field, North Dakota. Tail band was red with black trim. Lettering was white.

Aerofax, Inc. collection



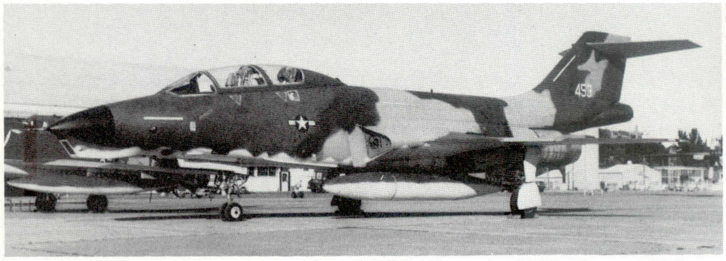
F-101F, 58-324, of the 154th TRS, Arkansas ANG, Little Rock AFB, Arkansas. Aircraft was used for reconnaissance training by the unit.

Fred Harl



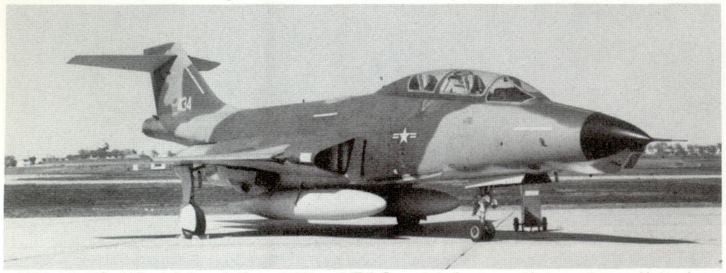
Three F-101B's, 57-422, 58-282, and 58-336, and a single F-101F, 58-318, of the 179th FIS, Minnesota ANG, formate for master photographer Maj. Gen. Wayne Gatlin.

Wayne Gatlin via Rene' Francillon



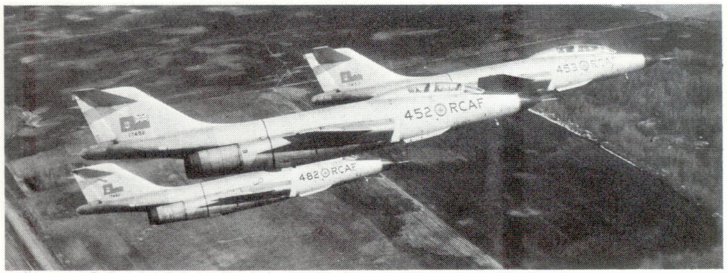
RF-101B, 59-453, of the 192nd TRS, Nevada ANG, Reno MAP, Nevada. Aircraft bore standard camouflage for type. Photographed at Hamilton AFB.

Dave Menard



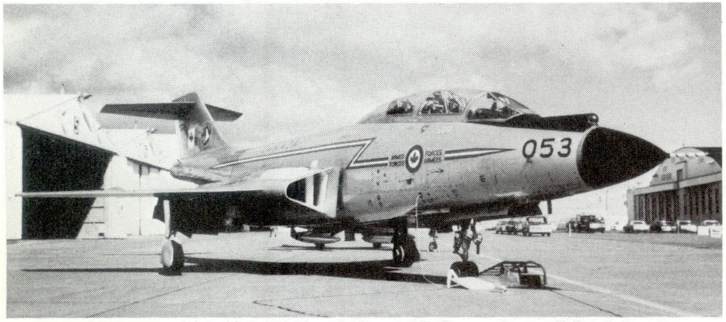
RF-101B, 59-434, of the 192nd TRS, which was the only unit to be assigned the RF-101B. Sensor bay nose modification was particularly distinctive.

Dave Menard



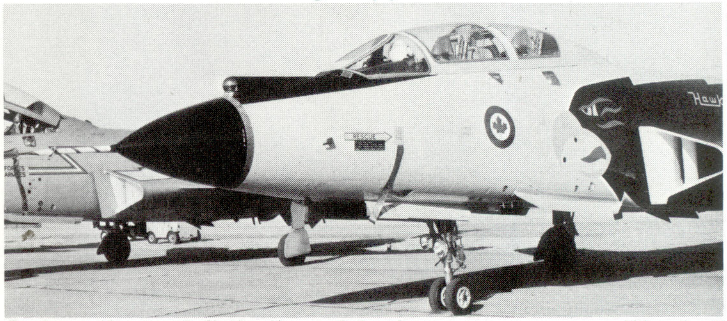
Three CF-101B's, 17482, 17452, and 17453, of No. 410 Squadron, RCAF formate over Canadian countryside. Natural metal schemes were standard during early years of RCAF service.

RCAF via Marty Isham



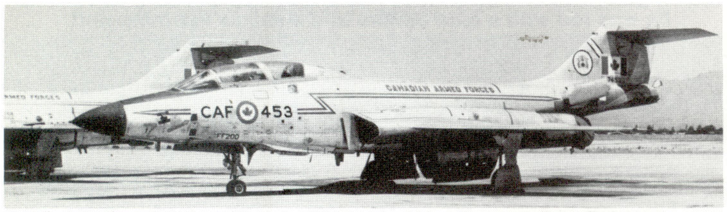
CF-101B, 101053 (57-418), of No. 425 Squadron, RCAF in silver paint and late markings for type. Unit badge is visible on vertical fin.

Jim Goodall



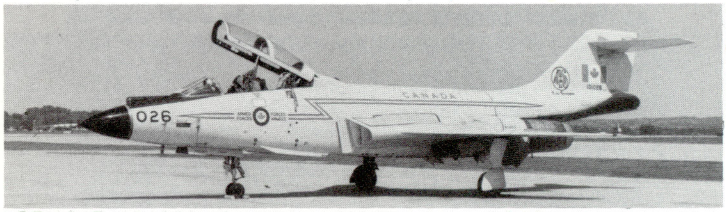
Perhaps the most distinctive paint scheme ever seen on a "Voodoo" was that worn by CF-101B, 101012, "Hawk One" of No. 409 Squadron. Seen at Abbotsford Airport, Canada on 8-14-77.

Pete Lewis



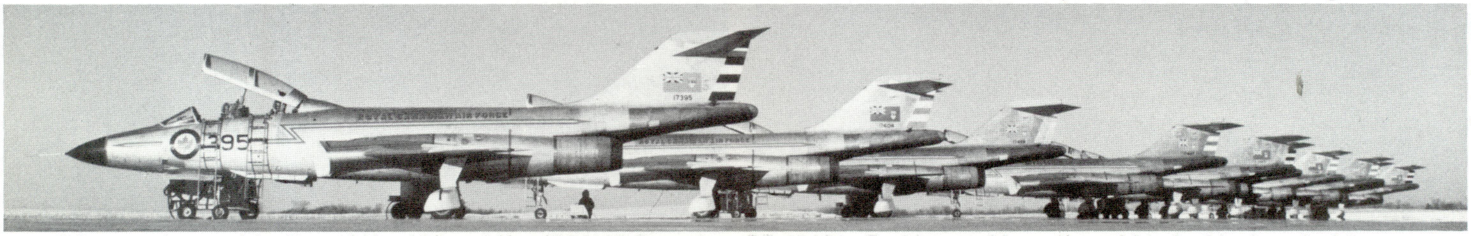
CF-101B, 17453 (59-453) on No. 416 Squadron, RCAF. Fuselage was natural metal with red and white trim bolt. Fin stripe was yellow and black.

Menard collection



CF-101B, 101026, also of No. 416 Squadron RCAF wears present-day markings and paint of CF-101B's in RCAF service. One Comox-based EF-101B is supposedly extant, however, wearing all-black.

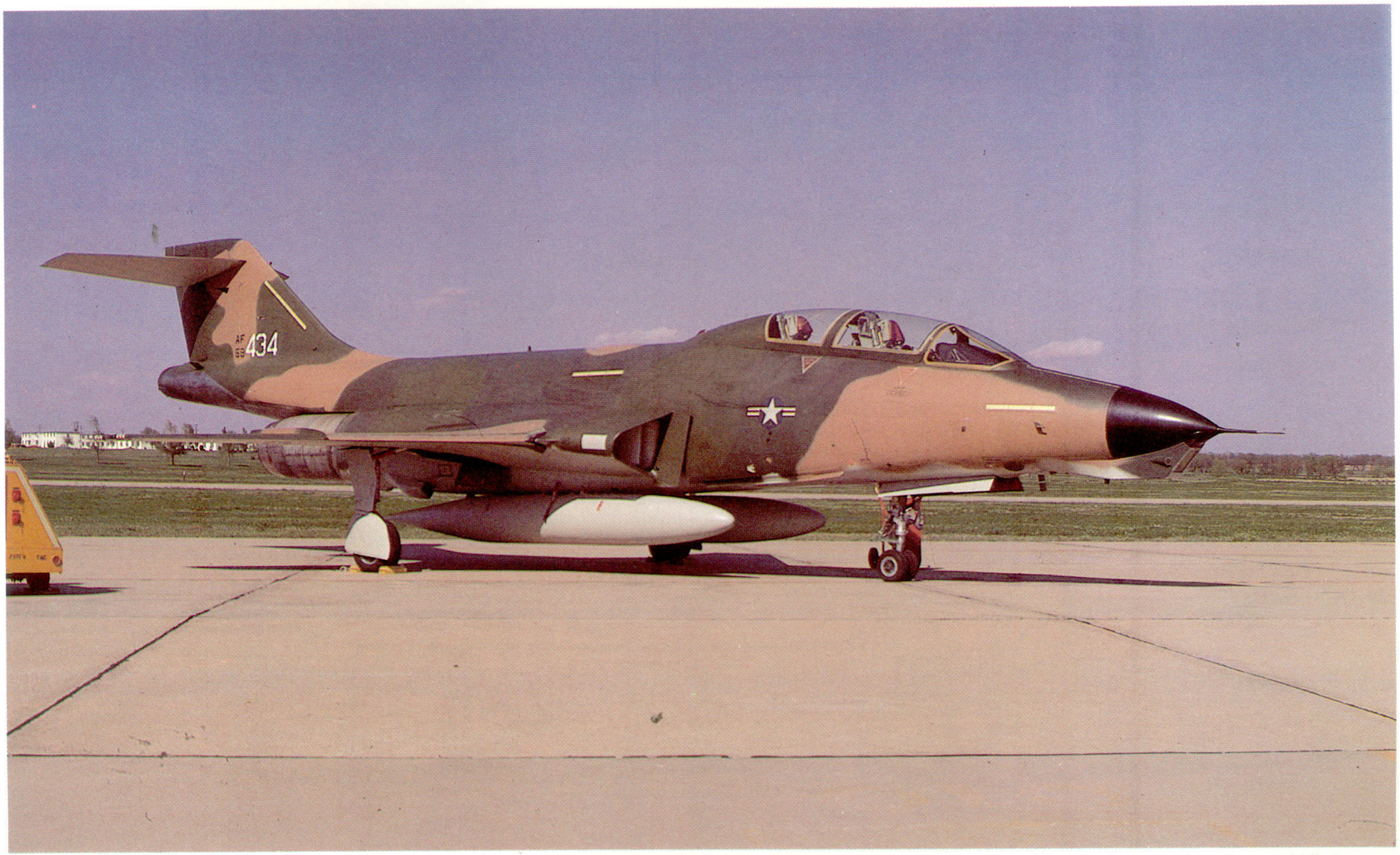
George Cockle



A lineup of a combination of No. 416 and No. 409/410 Squadron CF-101B's. Rudder markings, thought to be black and white, are somewhat unusual. Aircraft were in natural metal schemes with red and white trim bolt. Several of the aircraft shown were armed with AIM-4's.

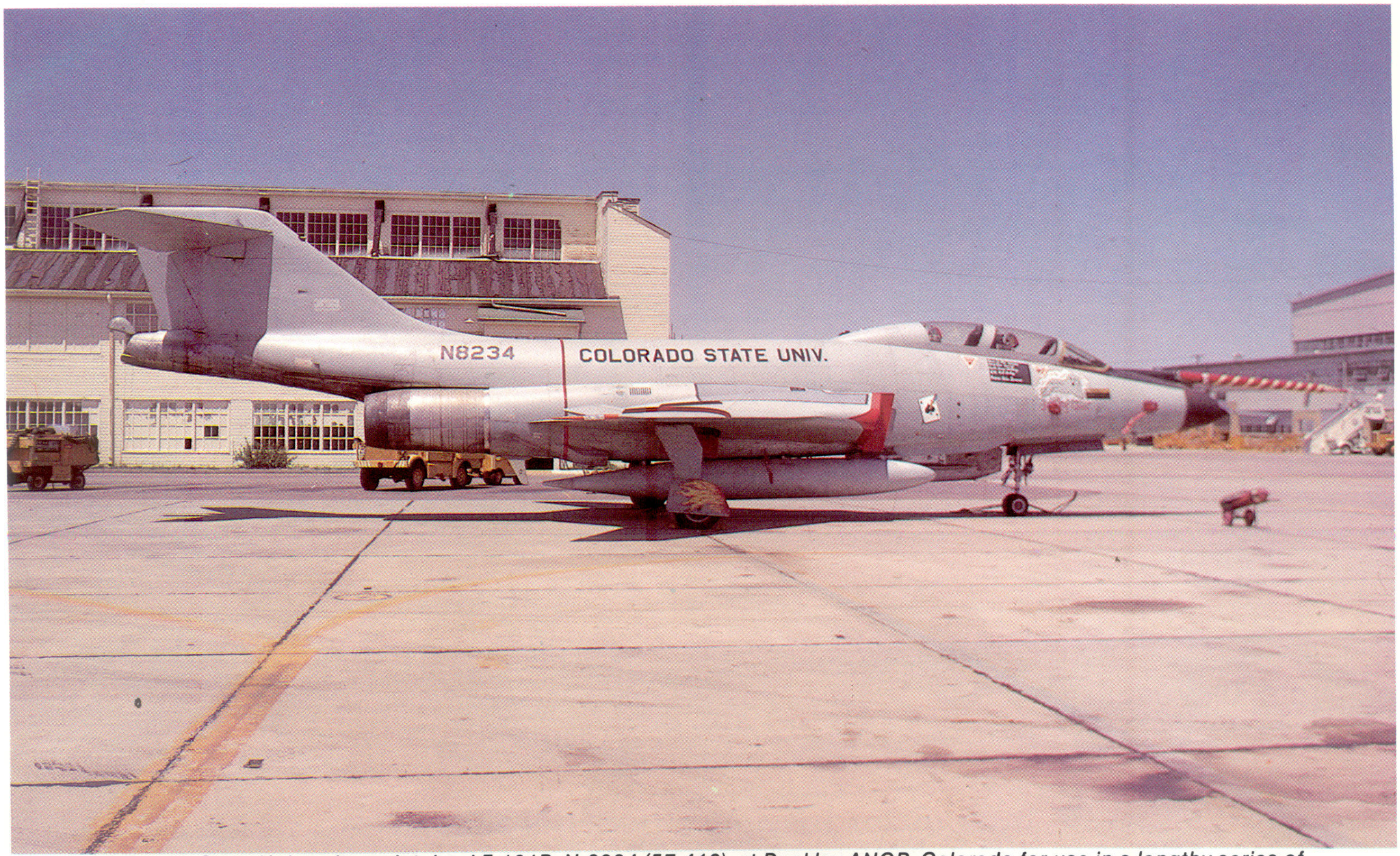
RCAF via Marty Isham

Dennis Jenkins

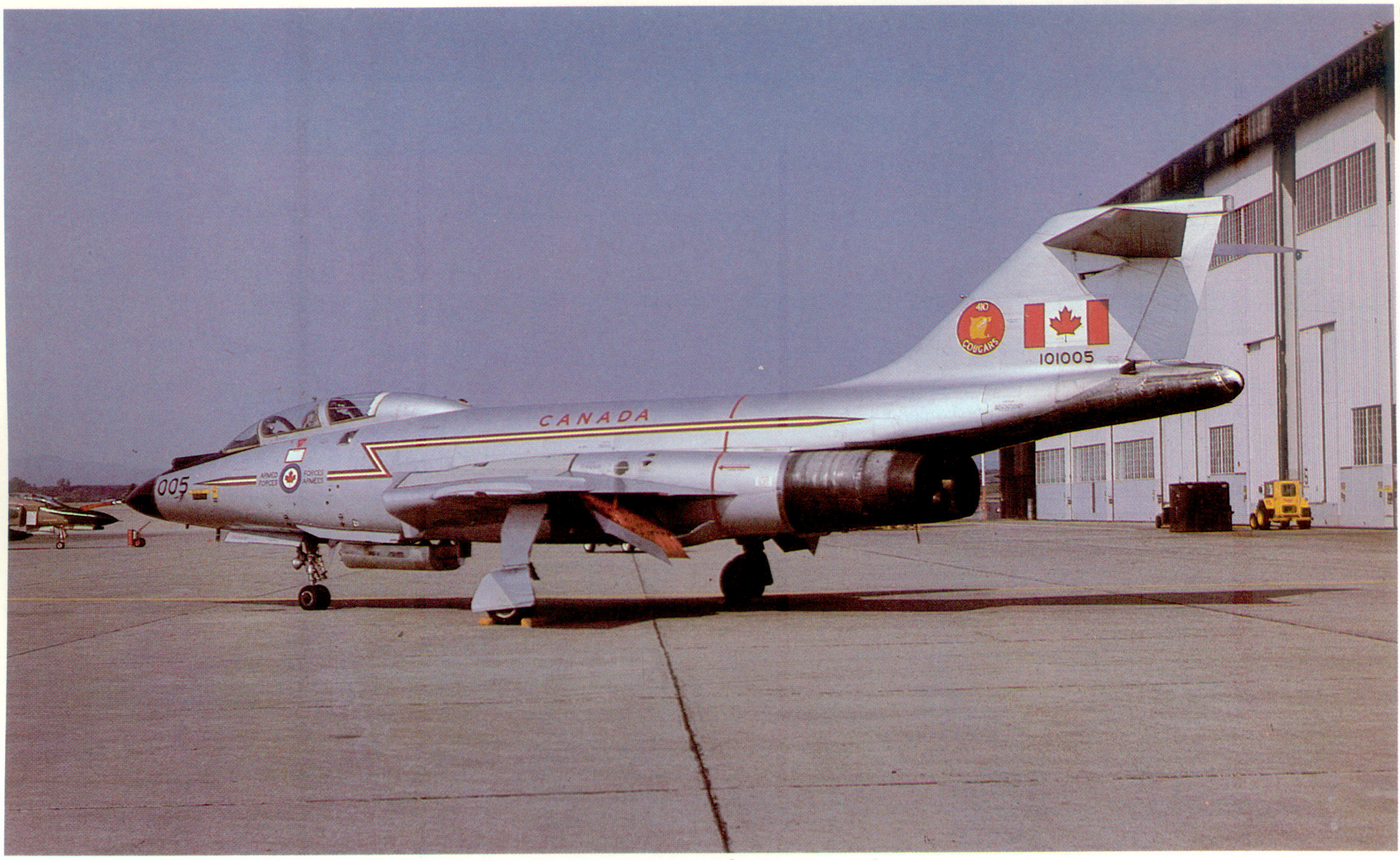


RF-101B, 59-434, of the 192nd TRS, Nevada ANG, Reno MAP, Nevada. Aircraft bore standard camouflage colors and pattern of Vietnam era. Four colors were involved, including tan, two shades of green, and white. The serial number was in two colors, black and white.

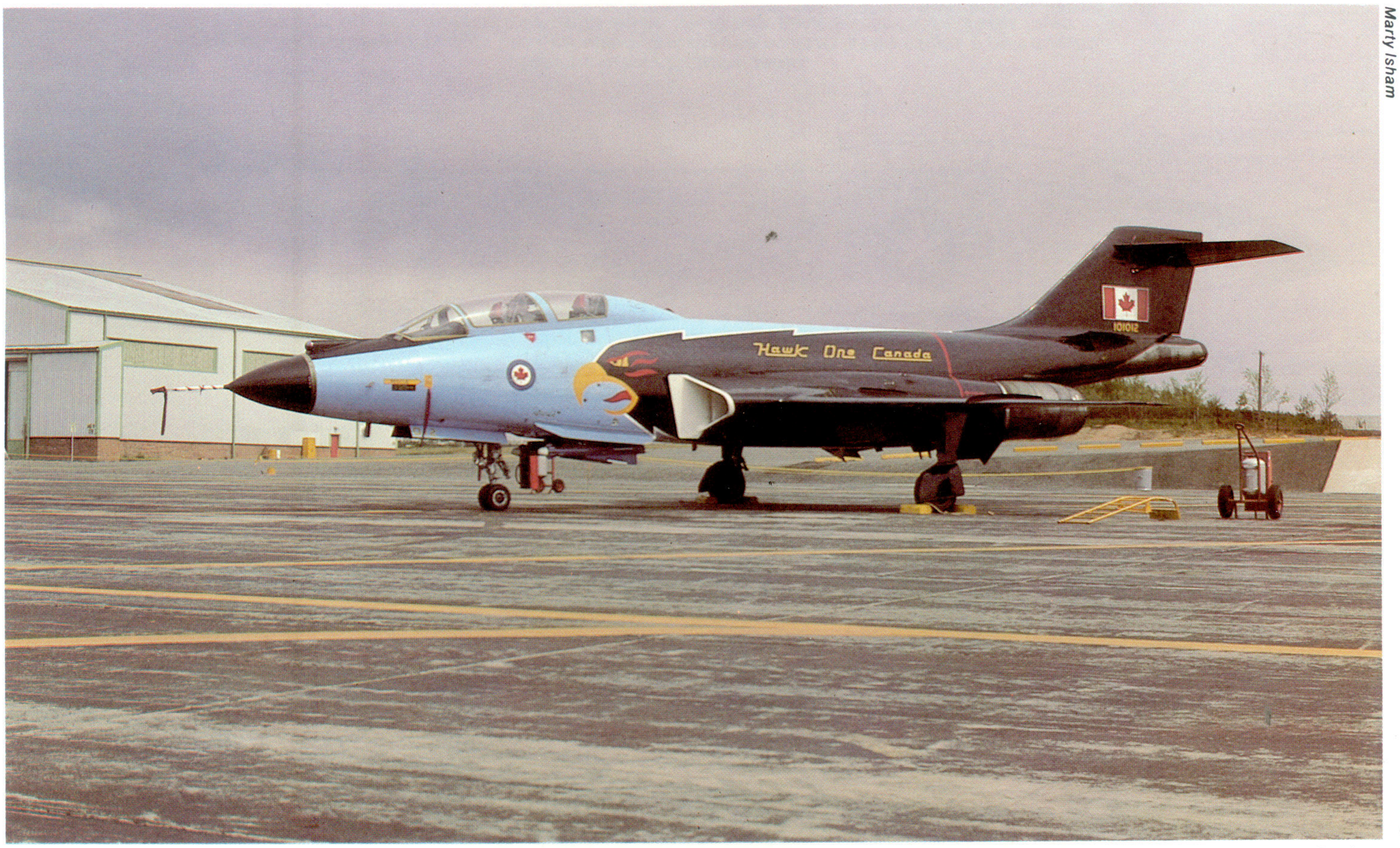
Dennis Jenkins



Colorado State University maintained F-101B, N-8234 (57-410), at Buckley ANGB, Colorado for use in a lengthy series of environmentally related test programs. This aircraft was almost certainly the only civil-registered F-101 ever to fly. Nose art was entitled, "The Gray Ghost".


Dennis Jenkins

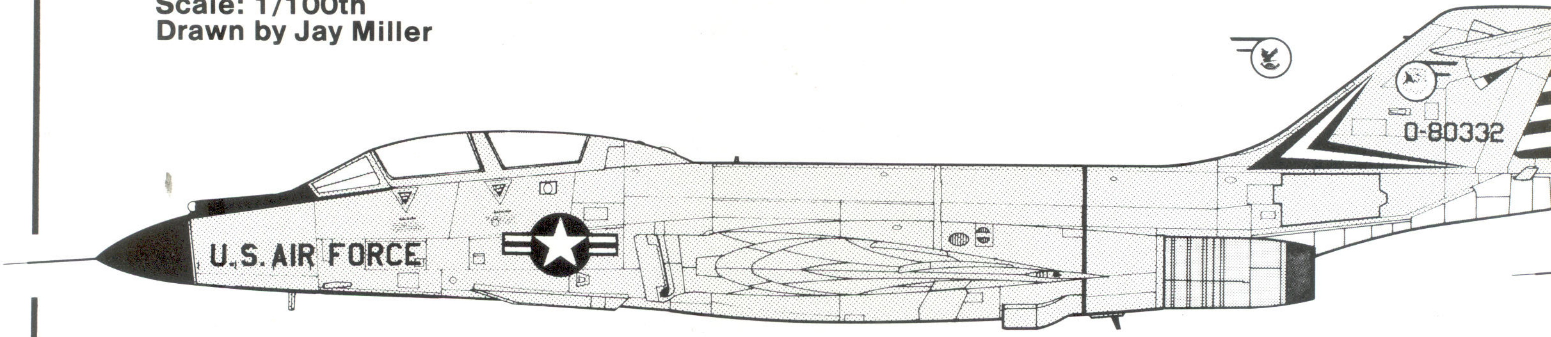
CF-101B, 101005, of No. 410 AWFS (TNG), Bagotville, during a transient stopover at Plattsburgh AFB in June of 1975. Aircraft is painted silver overall.


Marty Isham

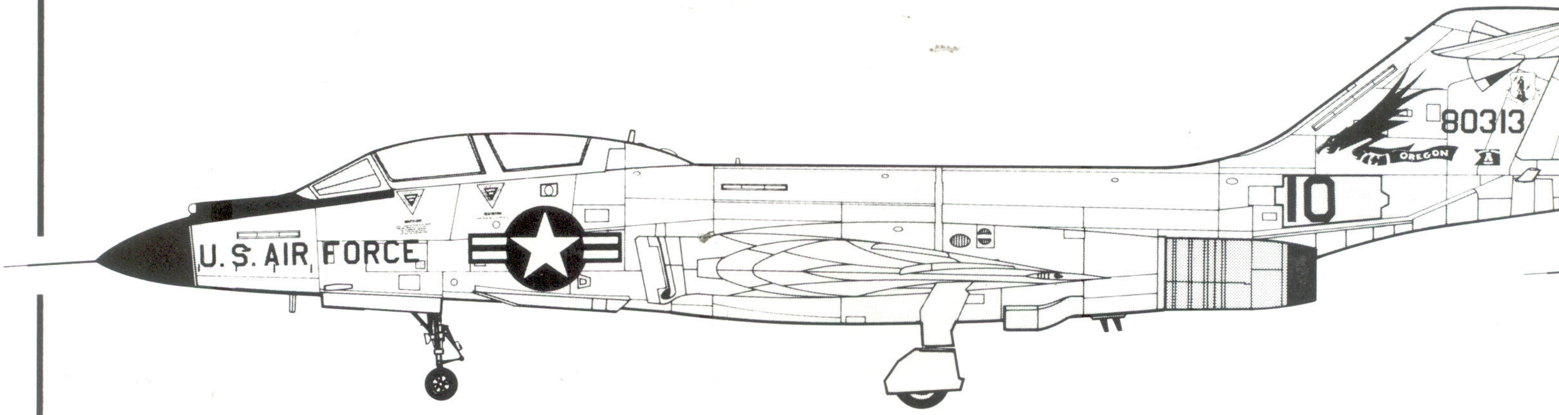
CF-101B, 101012, of No. 409 Squadron RCAF, and identified as "Hawk One Canada", was unquestionably the most colorful F-101B of all time. Aircraft was demonstrated at a number of airshows during its career.

SELECT MARKINGS

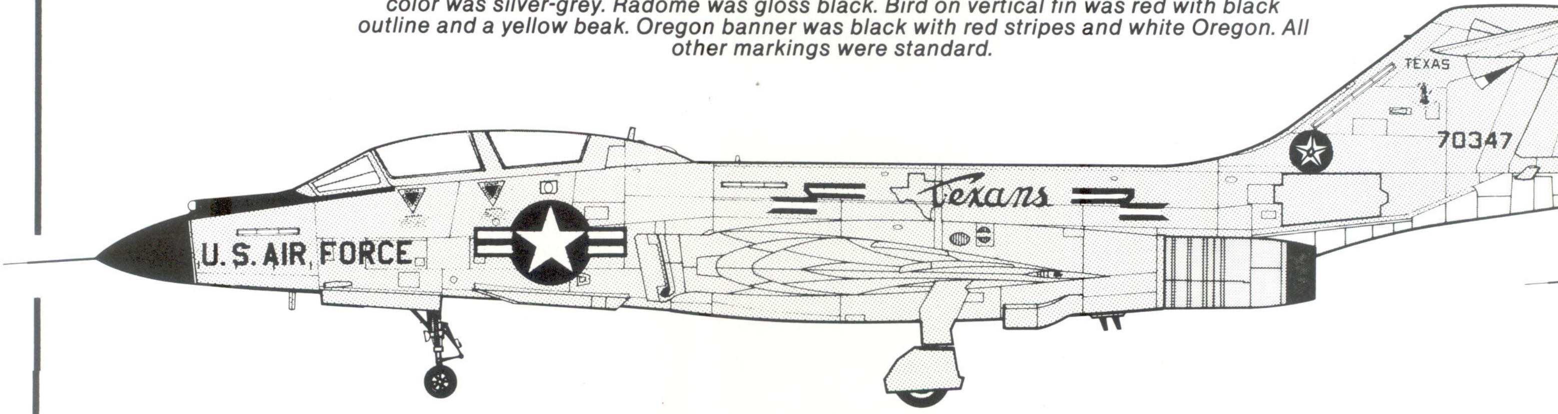
Scale: 1/100th
Drawn by Jay Miller



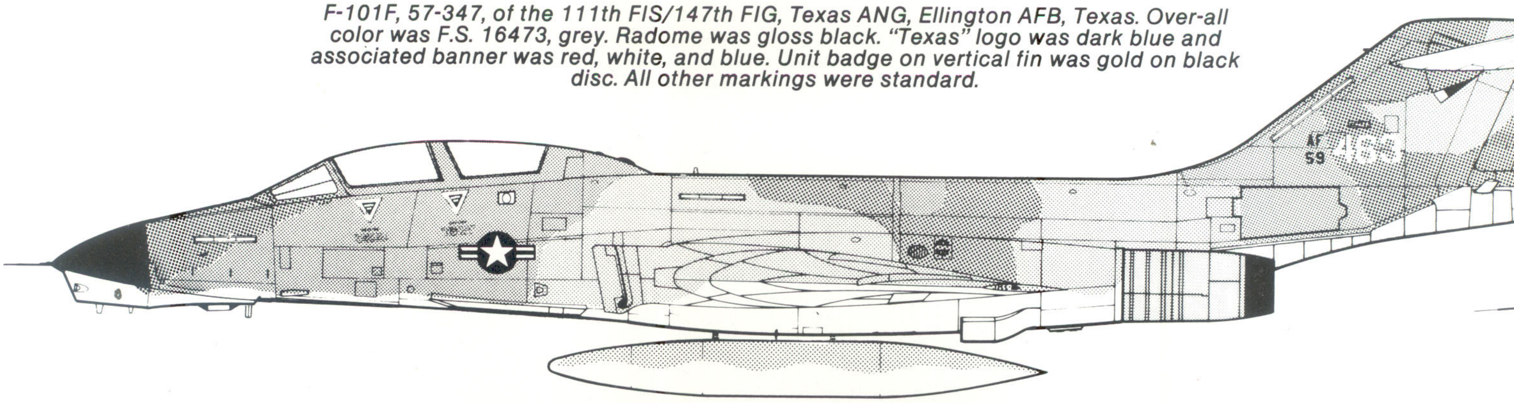
F-101B, 58-332, of the 4756th CCTS/ADWC, Tyndall AFB, Florida. Over-all color was F.S. 16473, grey. Radome was gloss black. Chevron on tail was red, white, and black. Rudder stripes were white and red. Unit badge was on left side of vertical fin, and ADC badge on right side. All other markings were standard.



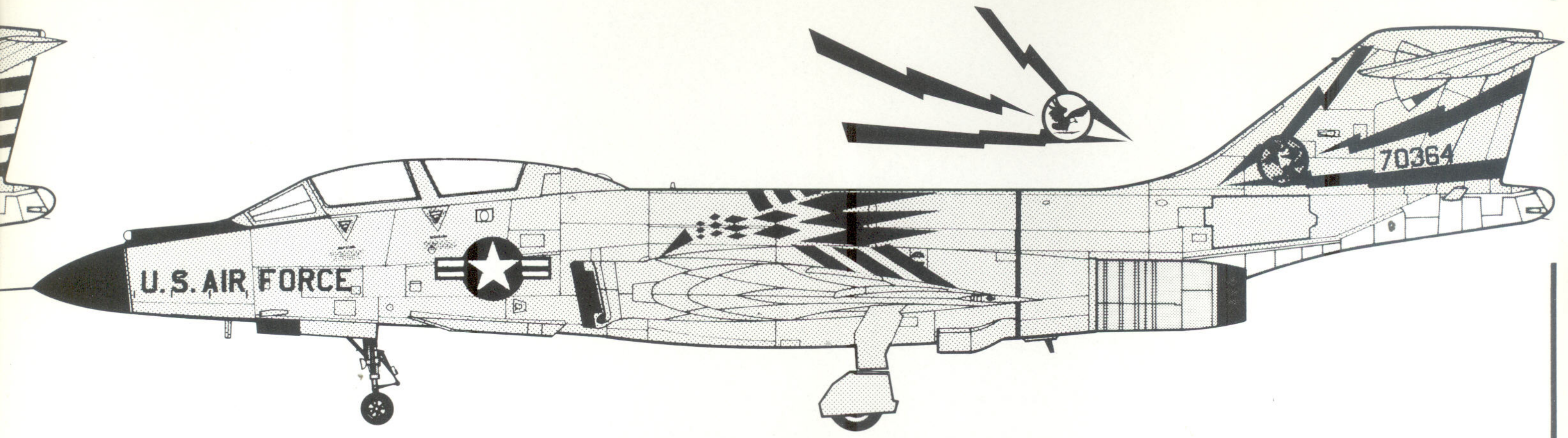
F-101B, 58-313, of the 142nd FIS/147th FIG, Oregon ANG, Portland IAP, Oregon. Over-all color was silver-grey. Radome was gloss black. Bird on vertical fin was red with black outline and a yellow beak. Oregon banner was black with red stripes and white Oregon. All other markings were standard.



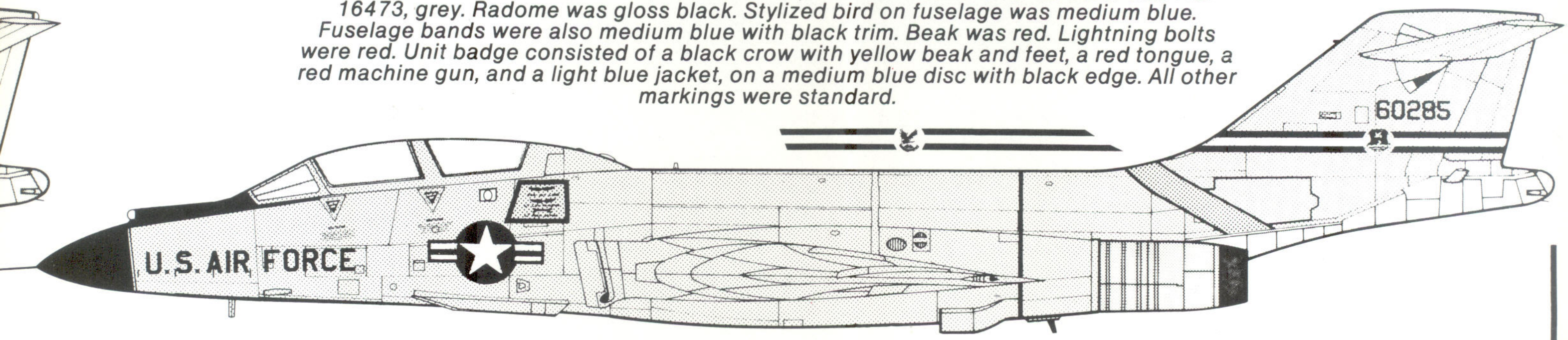
F-101F, 57-347, of the 111th FIS/147th FIG, Texas ANG, Ellington AFB, Texas. Over-all color was F.S. 16473, grey. Radome was gloss black. "Texas" logo was dark blue and associated banner was red, white, and blue. Unit badge on vertical fin was gold on black disc. All other markings were standard.



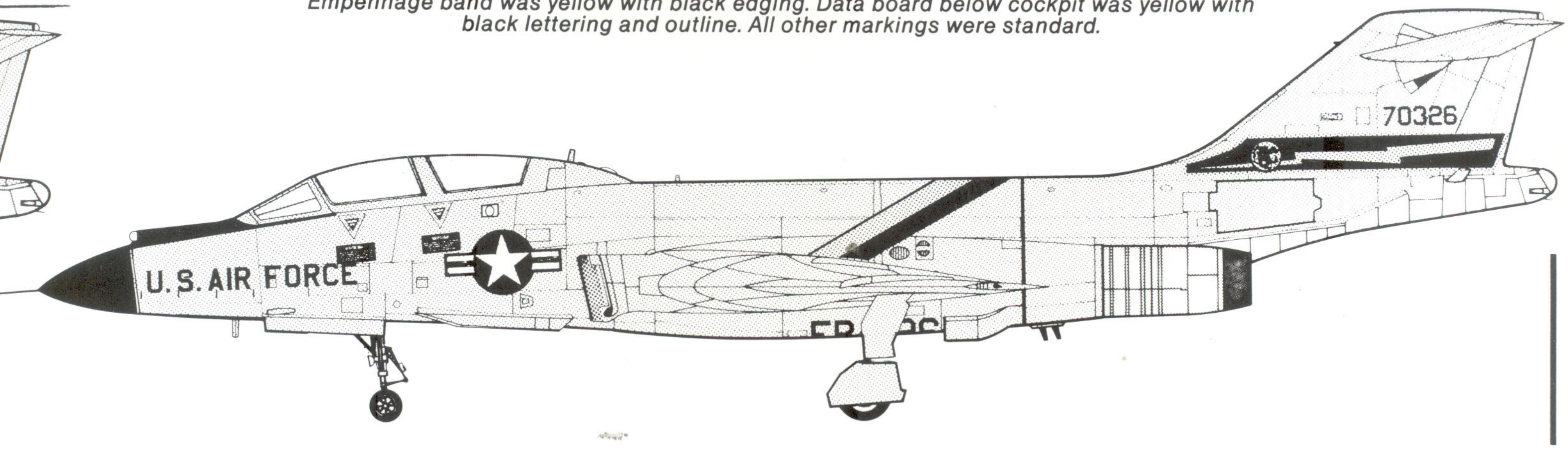
RF-101B, 59-463, of the 192nd TRS, Nevada ANG, Reno MAP, Nevada. Camouflage pattern was typical Vietnam era with the following colors used: F.S. 30219, tan; F.S. 34079, green; F.S. 34102, green; and F.S. 17875, insignia white. Radome was gloss black. Serial number consisted of AF and first two digits in black, and the rest in white. All other markings were standard.



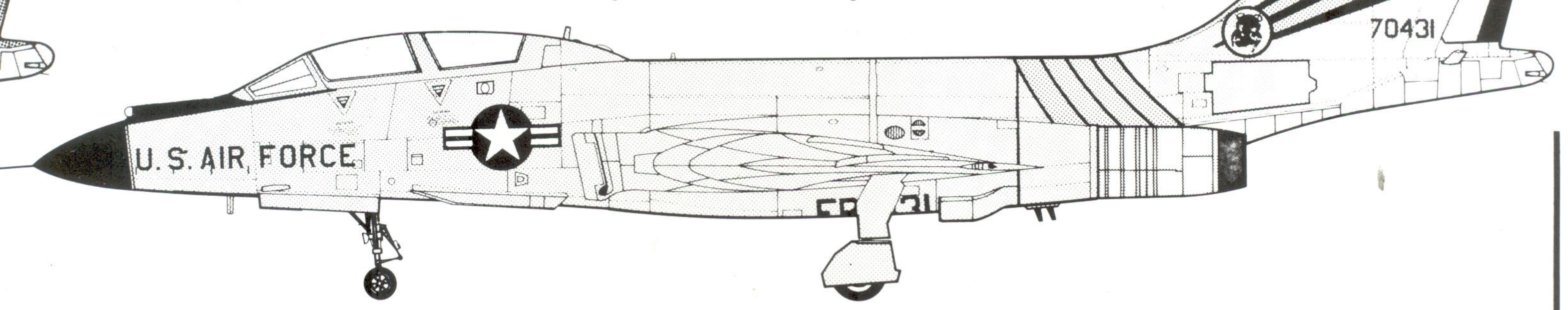
F-101B, 57-364, of the 60th FIS, Hanson Field, Massachusetts. Over-all color was F.S. 16473, grey. Radome was gloss black. Stylized bird on fuselage was medium blue. Fuselage bands were also medium blue with black trim. Beak was red. Lightning bolts were red. Unit badge consisted of a black crow with yellow beak and feet, a red tongue, a red machine gun, and a light blue jacket, on a medium blue disc with black edge. All other markings were standard.



F-101B, 56-285, of the 84th FIS, Hamilton Field, California. Over-all color was F.S. 16473, grey. Radome was gloss black. Vertical fin bands were red (top), white, and blue, with red, yellow, and blue unit badge in the middle on the left side and the ADC badge on the right. Empennage band was yellow with black edging. Data board below cockpit was yellow with black lettering and outline. All other markings were standard.



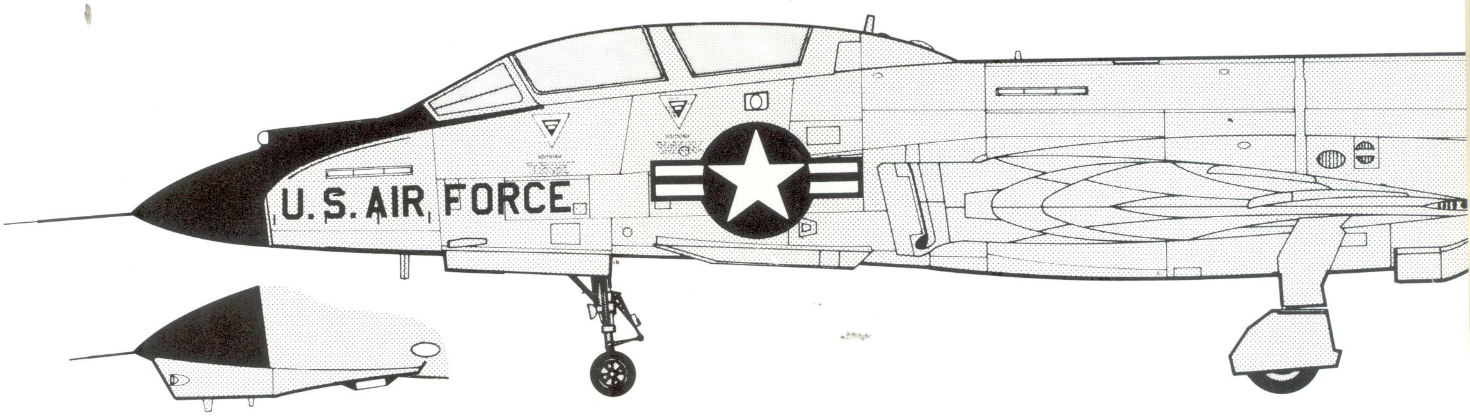
F-101B, 57-326, of the 444th FIS, Charleston AFB, S. Carolina. Over-all color was F.S. 16473, grey. Radome was gloss black. Vertical fin band was green with yellow lightning bolt through middle and a yellow border. Unit badge consisted of a green gargoyle with red lips and eyes, gold teeth and eyeballs, and red rocket and lightning, on a gold disc bordered in black and gold. Fuselage bands were yellow (front) and green. Splitter plate was also green. All other markings were standard.



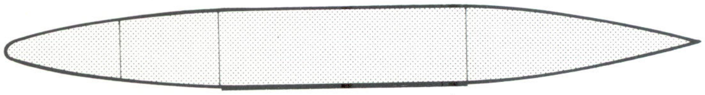
F-101B, 57-431, of the 437th FIS, Oxnard AFB, California. Aircraft was natural metal over-all. Radome was gloss black with a red band at fuselage intersect. Vertical fin rays were gold and black with ADC badge on right side and unit badge on left. Fuselage bands were gold with black trim. Rudder trim was medium red. Pitot was barber poled in red and white. All other markings were standard.

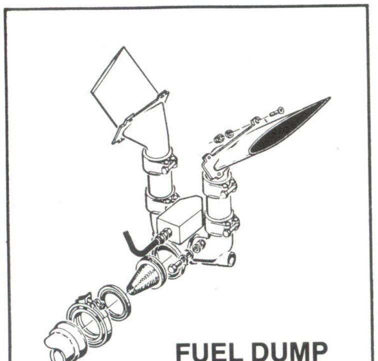
MCDONNELL F-101B, 58-259

Aircraft was assigned to 2nd FITS, Tyndall AFB, Florida. Over-all color was F.S. 16473, grey. The radome was painted F.S. 17038, gloss black. The landing gear were painted F.S. 17178, aluminum, and the wheel wells were initially painted F.S. 17875, insignia white, and later, approximately F.S. 34258, green. The rudder stripes were red and white and the vertical band ahead of the rudder was dark blue with white stars. All other markings were standard for type.

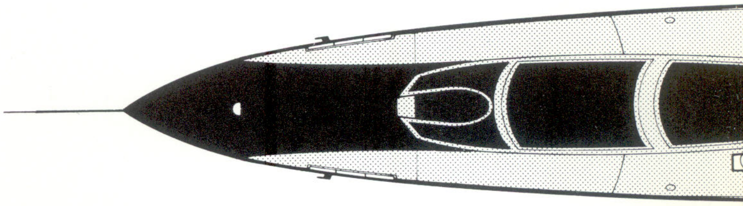


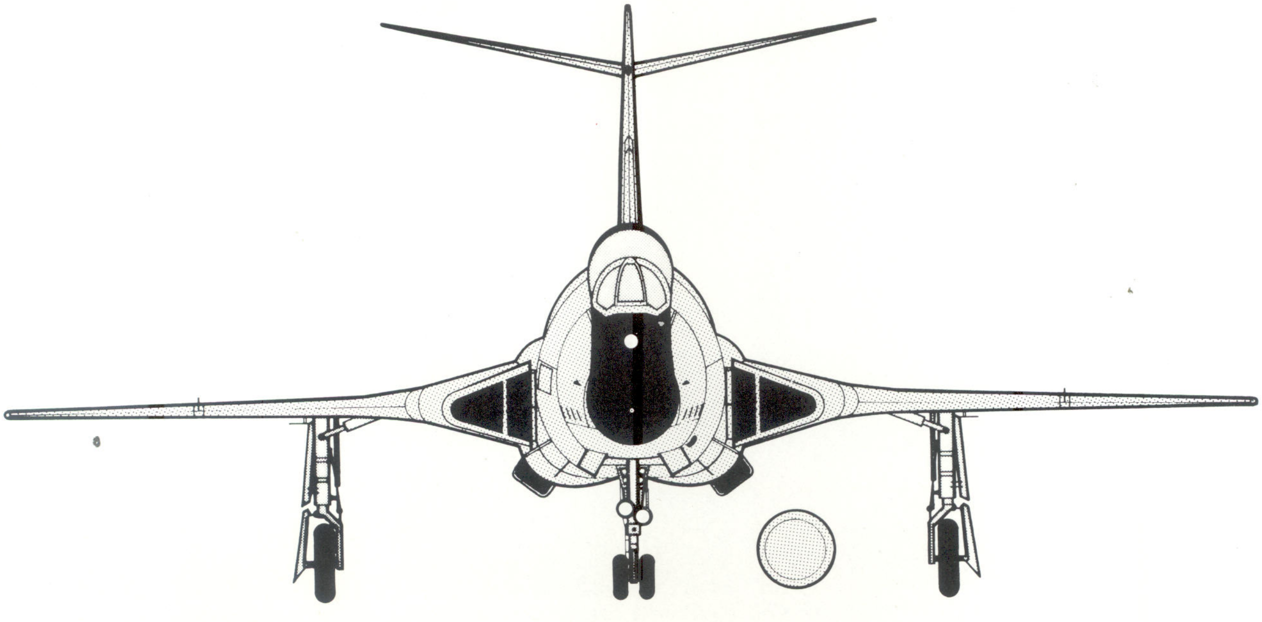
RF-101B NOSE

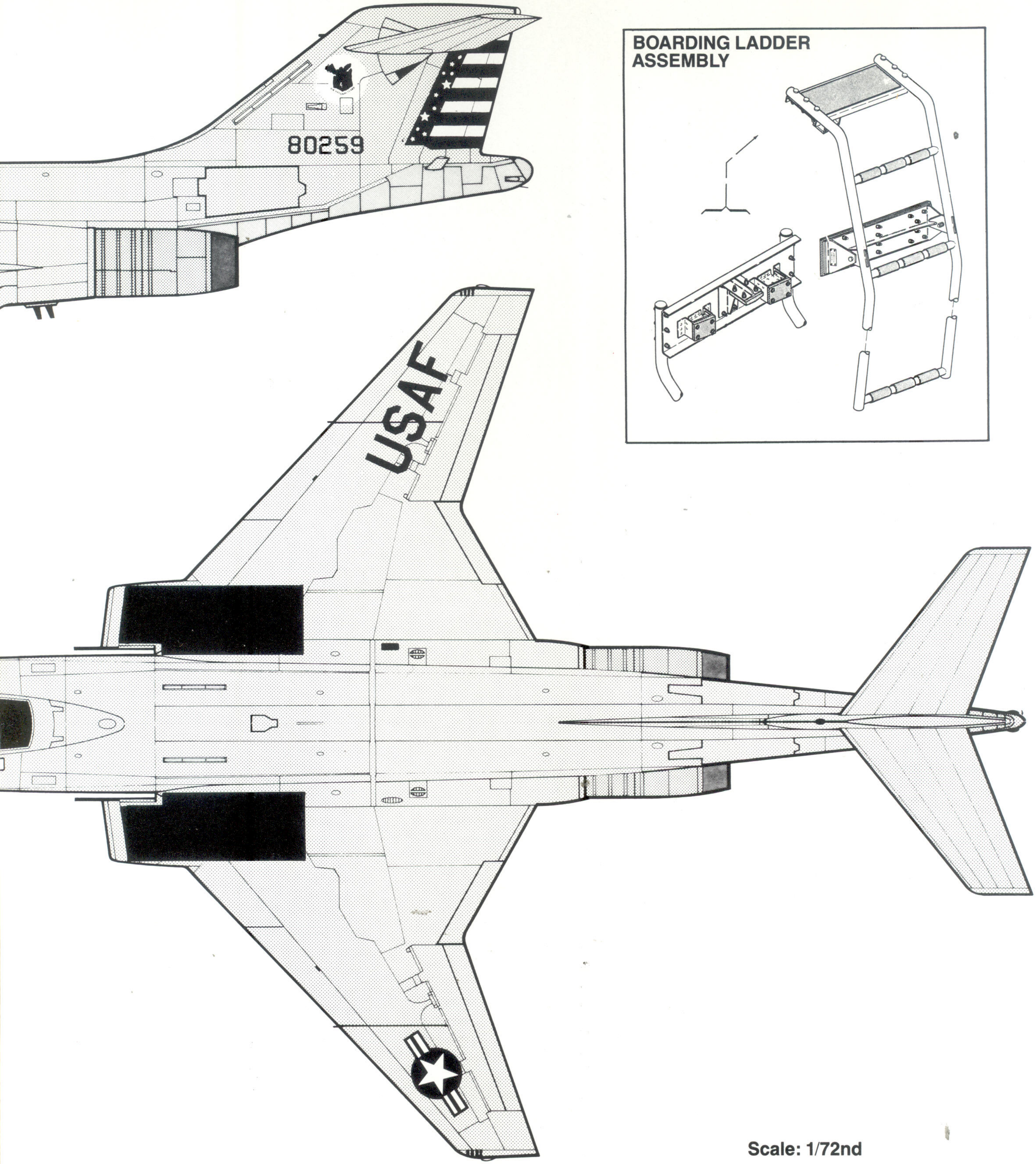




FUEL DUMP NOZZLE ASSEMBLY



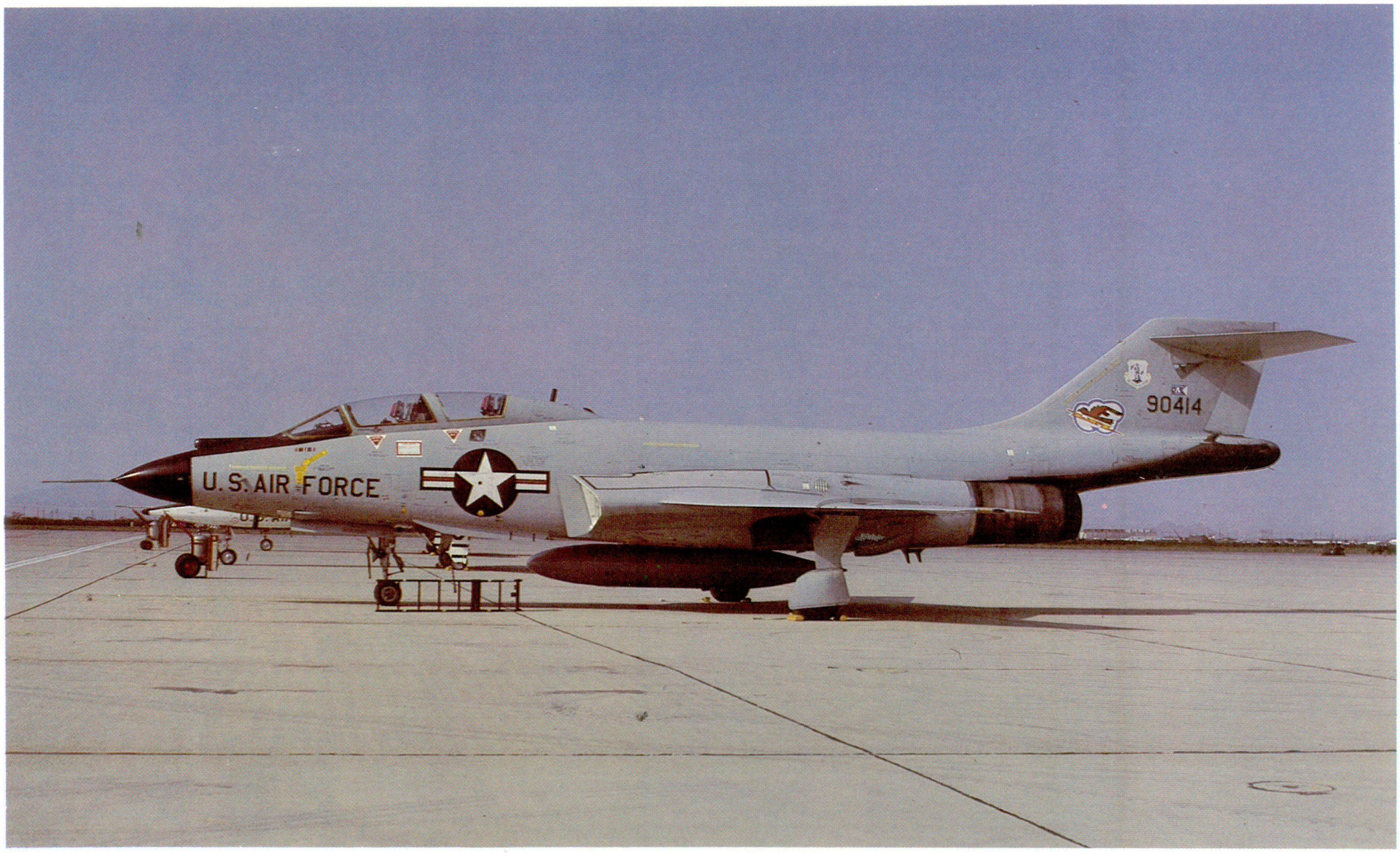




Scale: 1/72nd

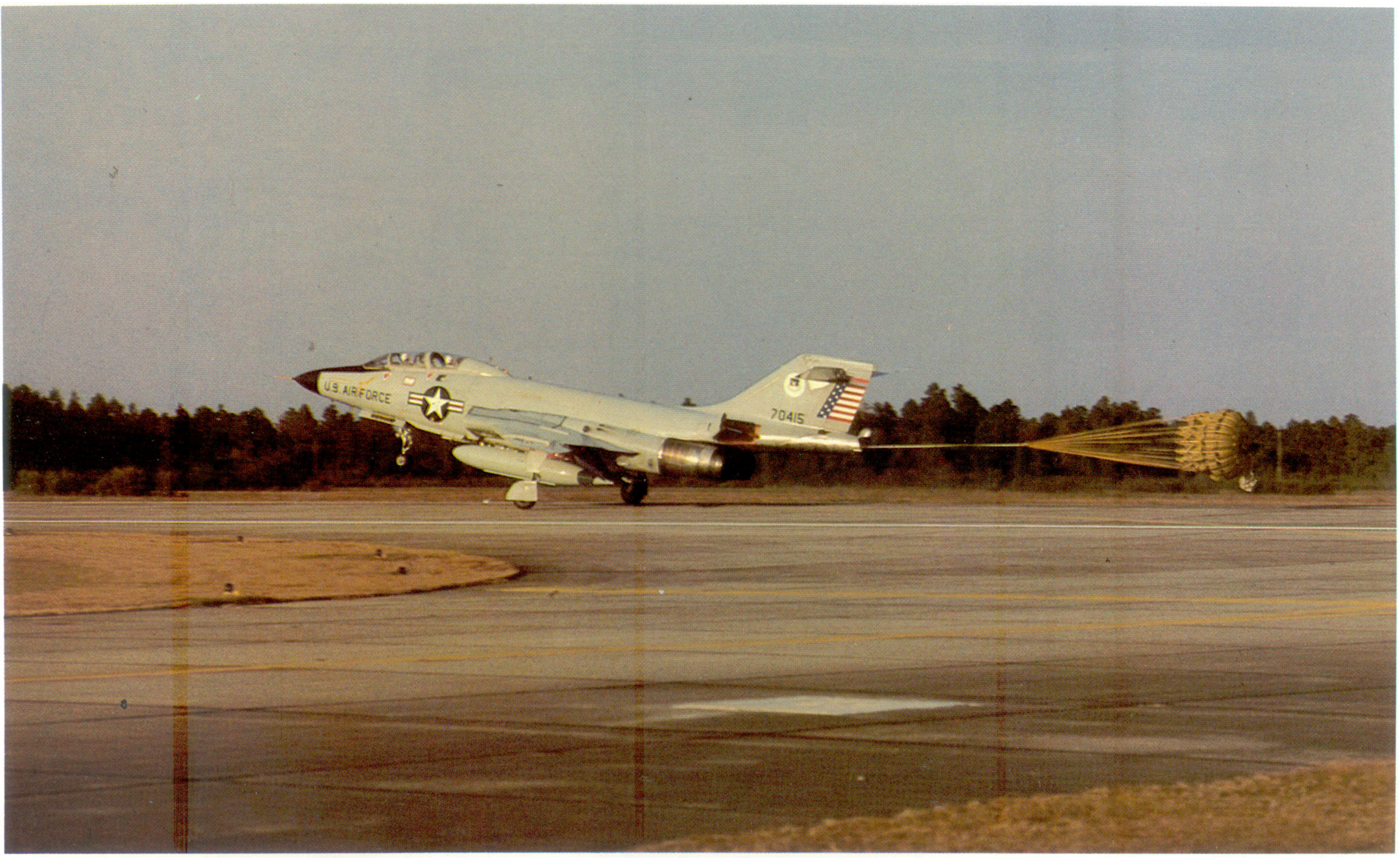
Drawn by Jay Miller

Dennis Jenkins

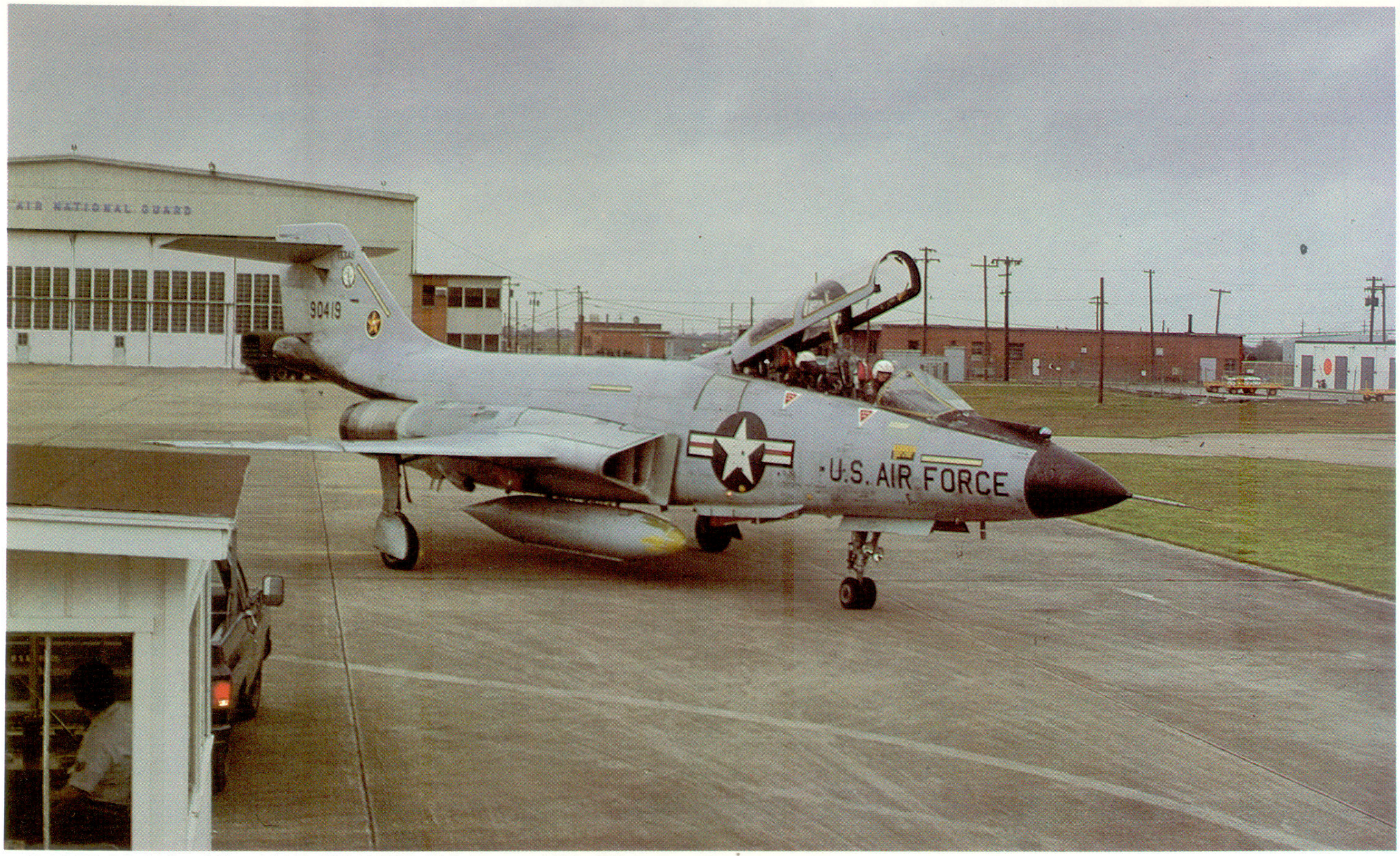


F-101B, 59-414, of the 136th FIS/197th FIG, New York ANG, Niagara Falls IAP, New York. Aircraft does not bear intake splitter logo, "I love New York" seen on most NYANG "Voodoo's".

Jay Miller/Aerofax, Inc.

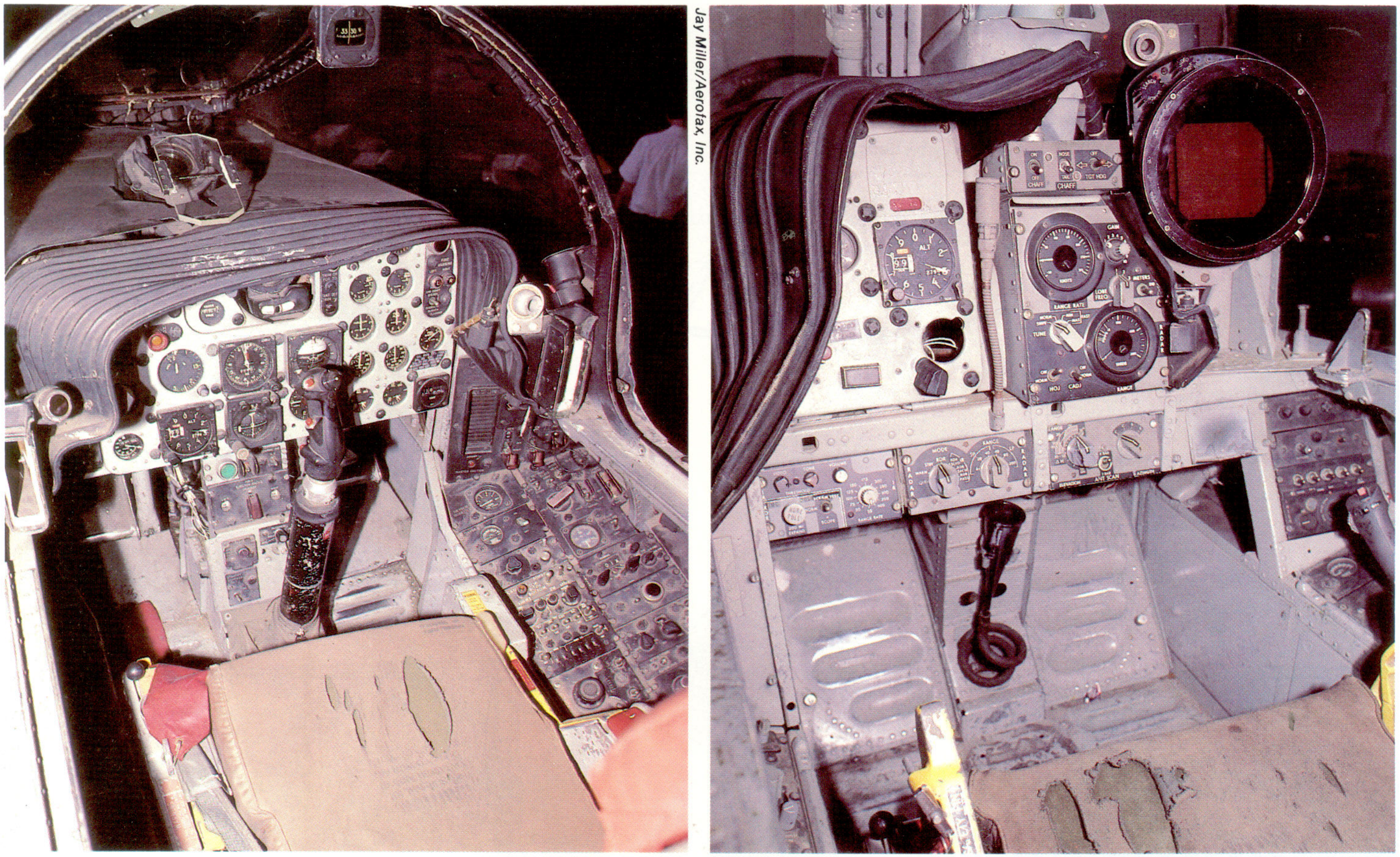


F-101B, 57-415, of the 2nd FITs, Tyndall AFB, Florida, during landing. High angle-of-attack increased aircraft drag coefficient and thus helped in the deceleration process. Wide main landing gear gave the F-101B excellent roll-out stability.



Jay Miller/Aerofax, Inc.

F-101F, 59-419, of the 111th FIS/147th FIG, Texas ANG, Ellington AFB, Texas. This aircraft was carrying a live AIM-4 weapons load and was returning to its alert hangar following an intercept mission. Note that main gear down locks were already in position.

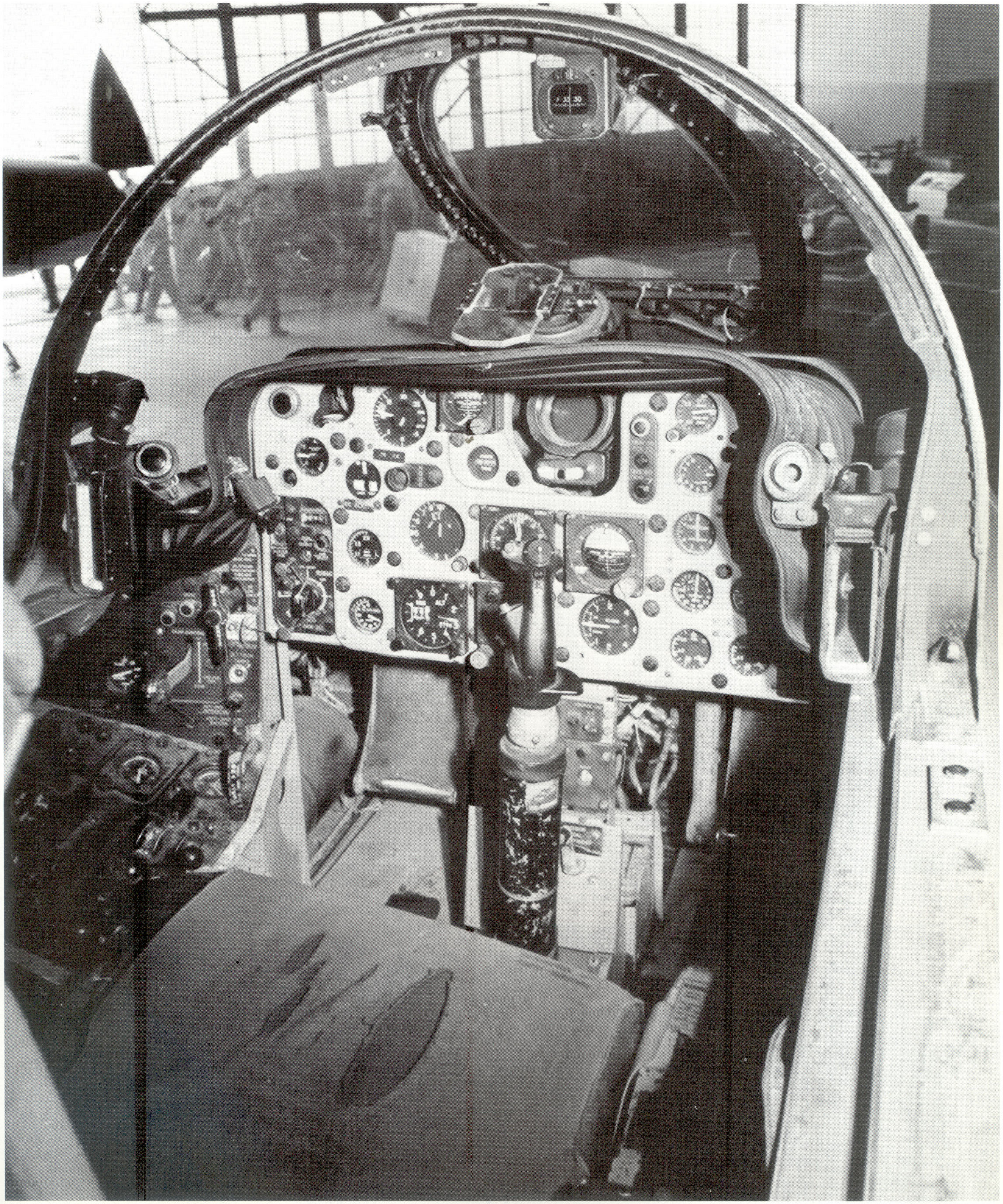


Jay Miller/Aerofax, Inc.

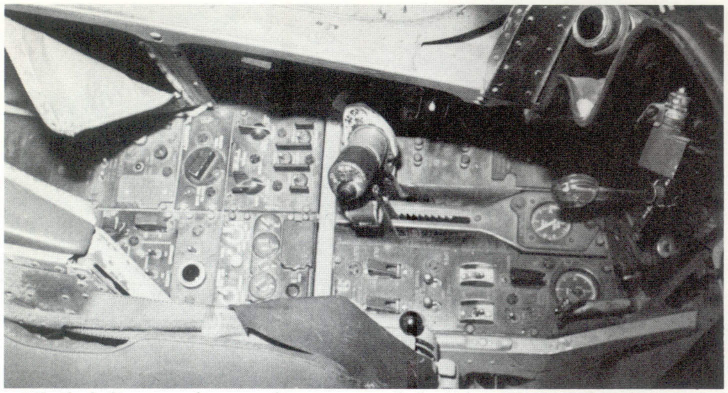
Jay Miller/Aerofax, Inc.

Front (left) and rear (right) cockpits of ex-NYANG F-101B, 59-424, illustrating colors used and detailing the pilot's combining glass and the weapon system operator's radar scope. A complete description of both cockpits can be found on p. 28.

Jay Miller/Aerofax, Inc.

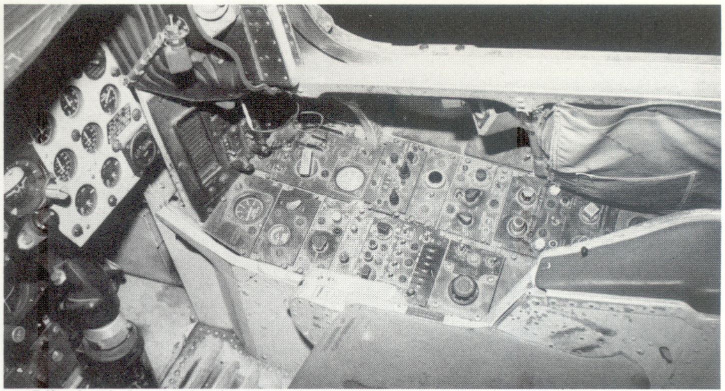


F-101B pilot's cockpit main instrument panel was typical of 1950's vintage fighters with large dial type instrumentation and minimal ergonomic considerations. Air vents on either side provided heating and cooling air. Combining glass is visible in lowered position on top of panel coaming.



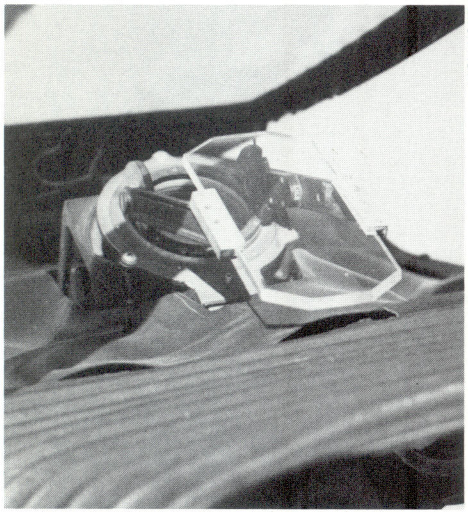
Jay Miller/Aerofax, Inc.

Pilot's left console panel accommodated throttle quadrant, some radio equipment, the flap lever, and the intercom control panel, among other items. Landing gear handle is visible to right.



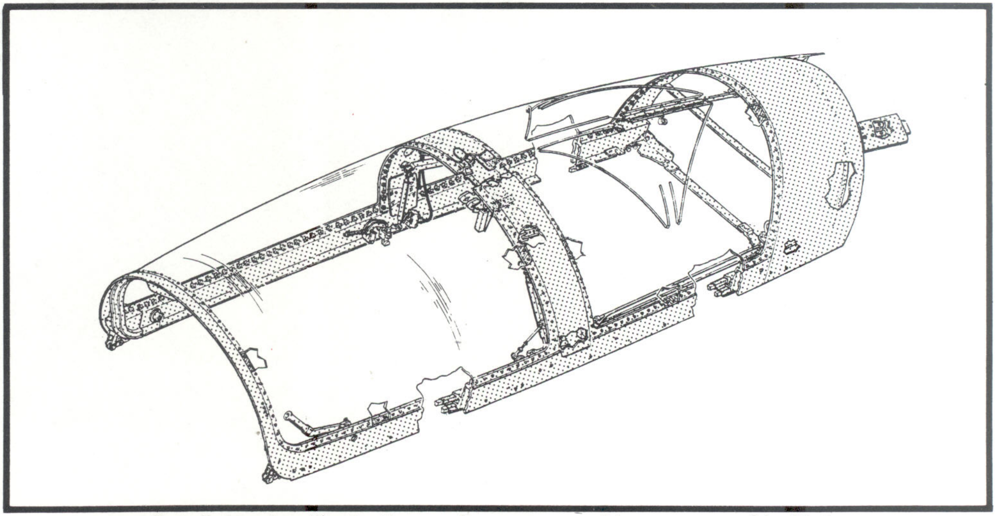
Jay Miller/Aerofax, Inc.

Pilot's right console panel accommodated the electrical control panel, the IFF control panel, the oxygen control panels, and the air conditioning control panel, among other items.

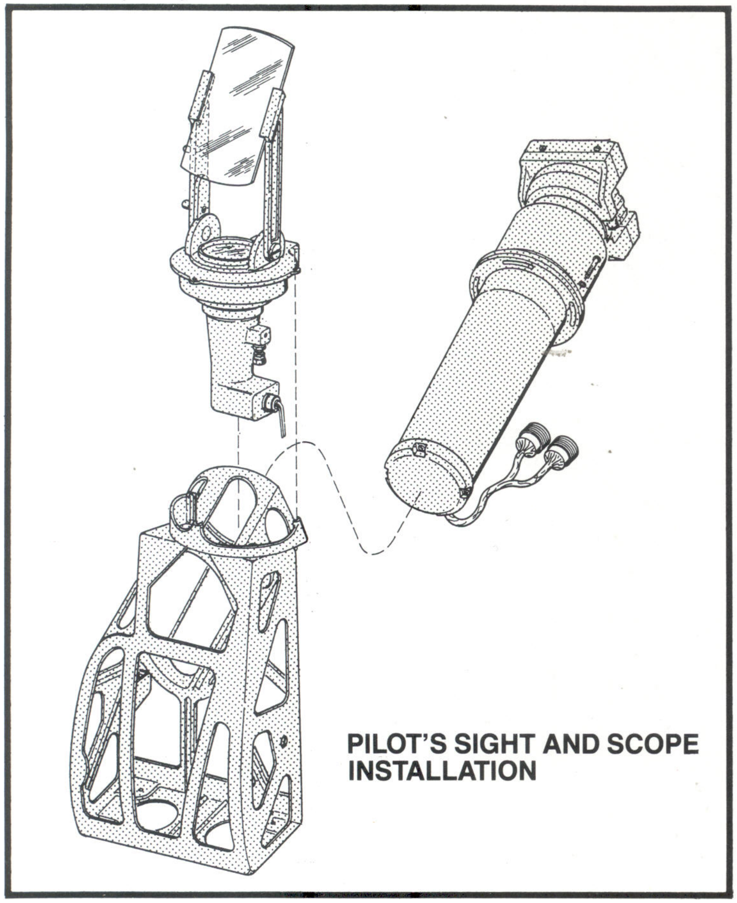


Mick Roth

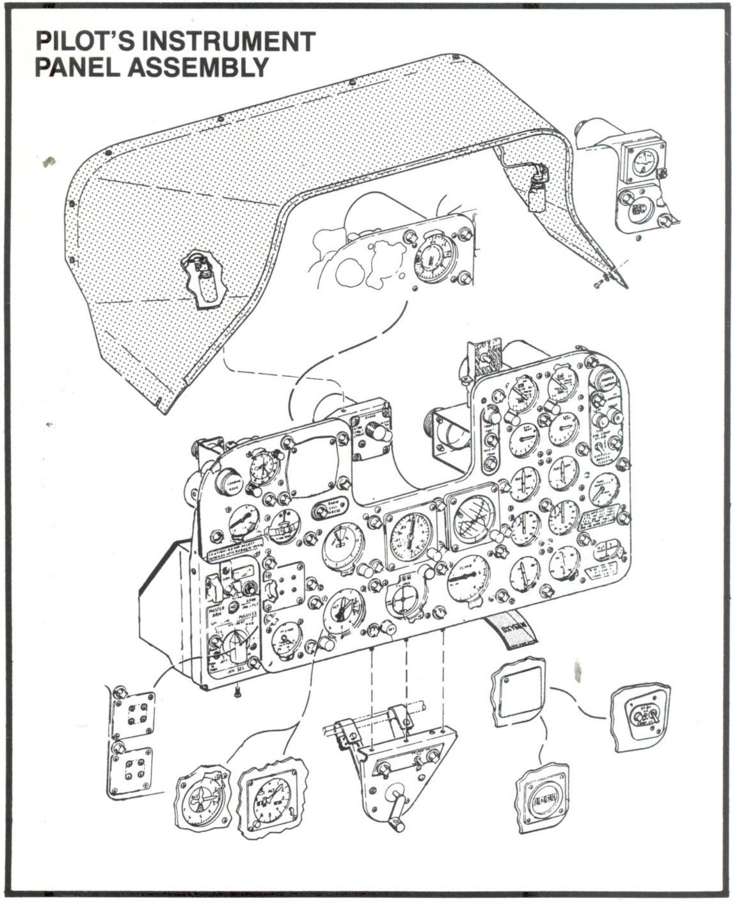
Detail of combining glass in lowered position. Image projection, like more contemporary HUD, was from below.



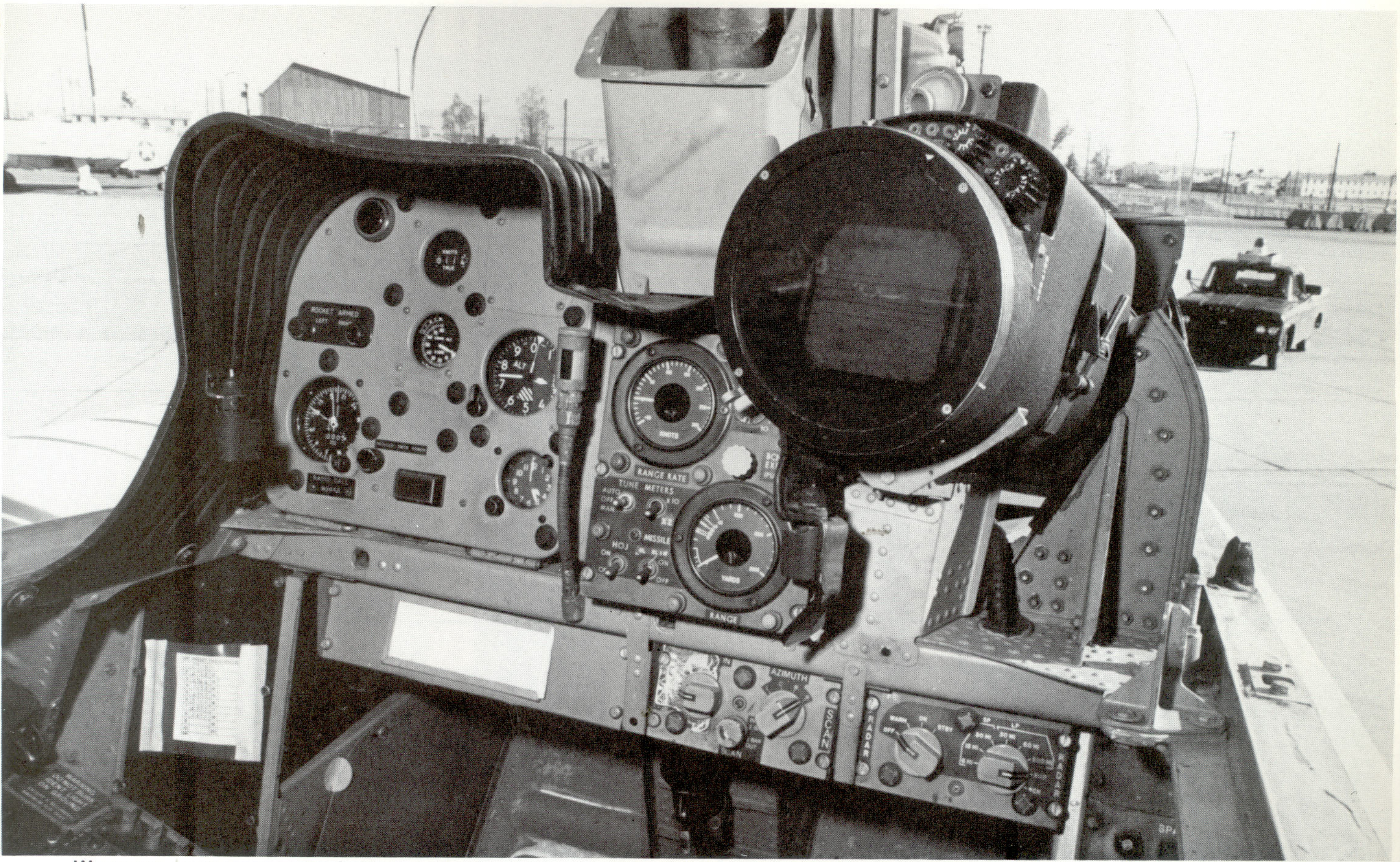
Detail drawing illustrating main canopy and frame assembly. Note defogging equipment and VHF antenna affixed to inside of rear transparency.



PILOT'S SIGHT AND SCOPE INSTALLATION

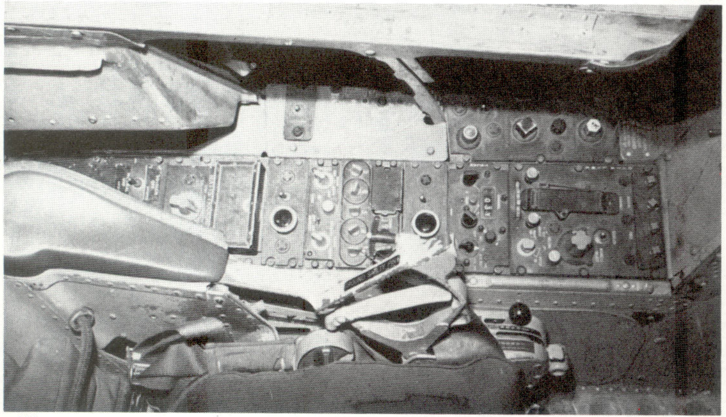


PILOT'S INSTRUMENT PANEL ASSEMBLY



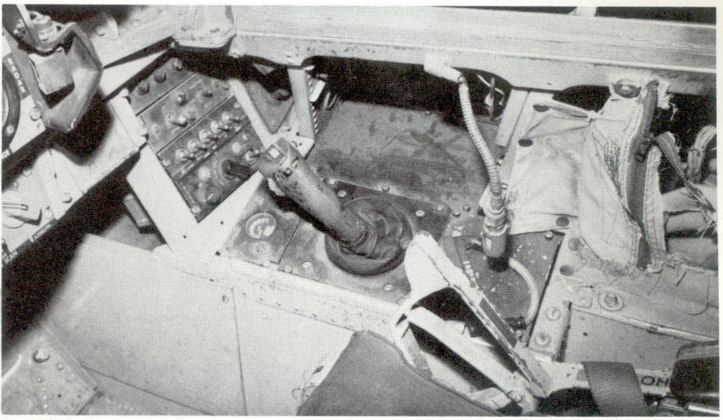
Mick Roth

Weapons system operator's main instrument panel in interceptor versions of the F-101B supported radar scope, some basic instrumentation, the radar scope control panels (center and lower left), the UHF control panels, and the rocket armed lights, among other items.



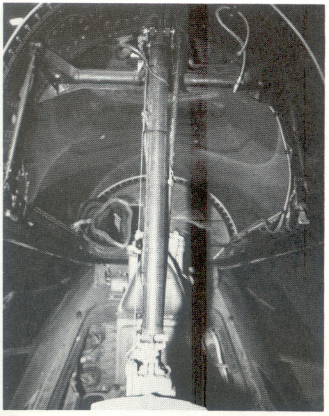
Jay Miller/Aerofax, Inc.

Weapons system operator's left console panel accommodated the VHF control panels, and other communications equipment. In the dual control aircraft, this panel also accommodated a throttle.



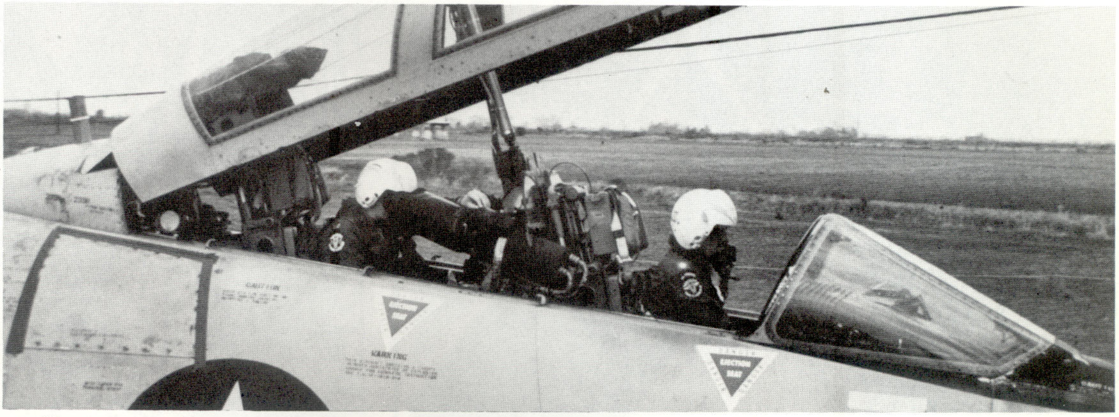
Jay Miller/Aerofax, Inc.

Weapons system operator's flight console accommodated the antenna hand control panel and oxygen control panel, among others.



Jay Miller/Aerofax, Inc.

Canopy jack was hydraulically actuated and mechanically safetied.



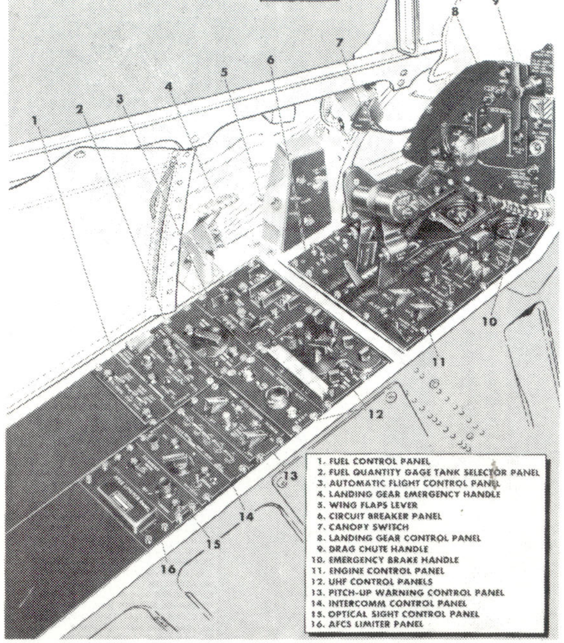
Jay Miller/Aerofax, Inc.

Weapons system operator is seen viewing radar scope imagery using sun shield which is normally stowed to the wso's right rear. Exposed placement of radar scope is unusual.

FRONT COCKPIT

Pilot's Left Console

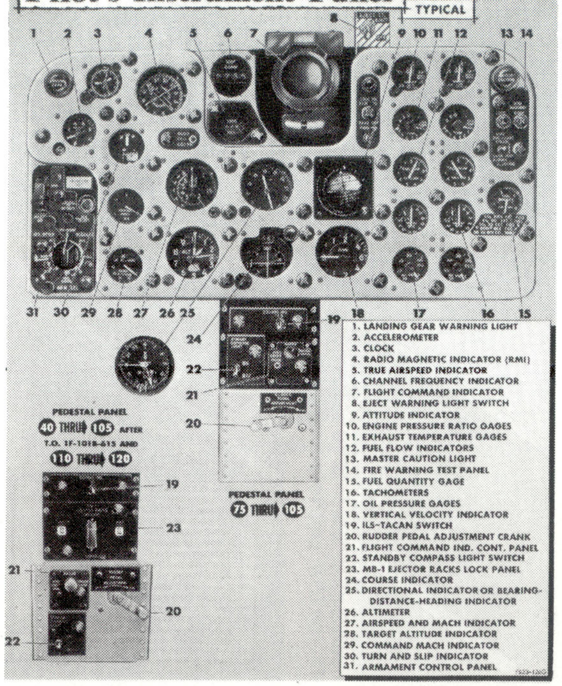
TYPICAL



1. FUEL CONTROL PANEL
2. FUEL QUANTITY GAGE TANK SELECTOR PANEL
3. AUTOMATIC FLIGHT CONTROL PANEL
4. LANDING GEAR EMERGENCY HANDLE
5. WING FLAPS LEVER
6. CIRCUIT BREAKER PANEL
7. CANOPY SWITCH
8. LANDING GEAR CONTROL PANEL
9. DRAG CHUTE HANDLE
10. EMERGENCY BRAKE HANDLE
11. ENGINE CONTROL PANEL
12. UHF CONTROL PANELS
13. PITCH-UP WARNING CONTROL PANEL
14. INTERCOMM CONTROL PANEL
15. OPTICAL SIGHT CONTROL PANEL
16. AFCS LIMITER PANEL

Pilot's Instrument Panel

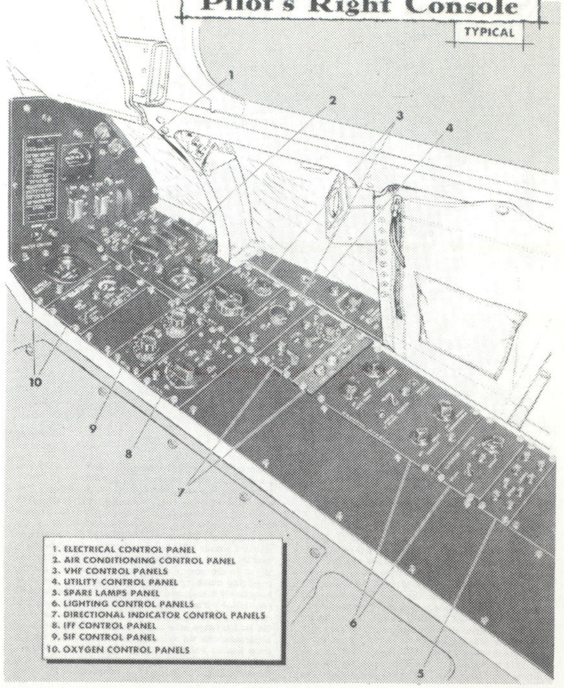
TYPICAL



1. LANDING GEAR WARNING LIGHT
2. ACCELEROMETER
3. CLOCK
4. RADIO MAGNETIC INDICATOR (RMI)
5. TRUE AIRSPEED INDICATOR
6. CHANNEL FREQUENCY INDICATOR
7. FLIGHT COMMAND INDICATOR
8. EJECT WARNING LIGHT SWITCH
9. ATTITUDE INDICATOR
10. ENGINE PRESSURE RATIO GAGES
11. EXHAUST TEMPERATURE GAGES
12. FUEL FLOW INDICATORS
13. MASTER CAUTION LIGHT
14. FIRE WARNING TEST PANEL
15. FUEL QUANTITY GAGE
16. TACHOMETERS
17. OIL PRESSURE GAGES
18. VERTICAL VELOCITY INDICATOR
19. ILS-TACAN SWITCH
20. RUDDER PEDAL ADJUSTMENT CRANK
21. FLIGHT COMMAND IND. CONT. PANEL
22. STANDBY COMPASS LIGHT SWITCH
23. MB-1 EJECTOR RACKS LOCK PANEL
24. COURSE INDICATOR
25. DIRECTIONAL INDICATOR OR BEARING-DISTANCE-HEADING INDICATOR
26. ALTIMETER
27. AIRSPEED AND MACH INDICATOR
28. TARGET ALTITUDE INDICATOR
29. COMMAND MACH INDICATOR
30. TURN AND SLIP INDICATOR
31. ARMAMENT CONTROL PANEL

Pilot's Right Console

TYPICAL

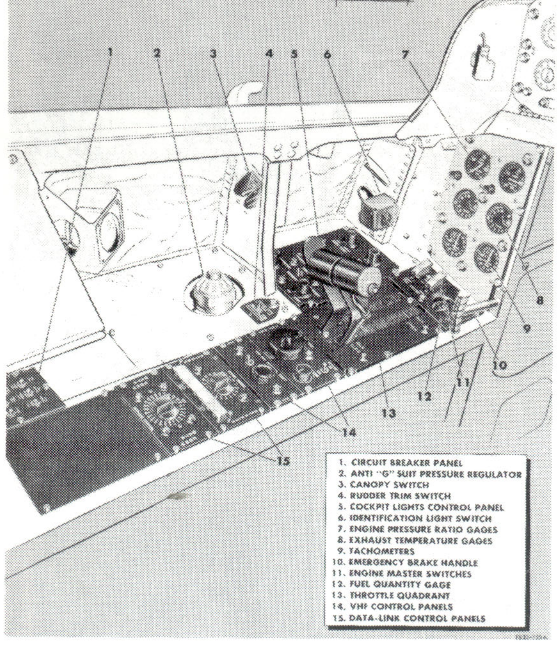


1. ELECTRICAL CONTROL PANEL
2. AIR CONDITIONING CONTROL PANEL
3. VHF CONTROL PANELS
4. UTILITY CONTROL PANEL
5. SPARE LAMPS PANEL
6. LIGHTING CONTROL PANELS
7. DIRECTIONAL INDICATOR CONTROL PANELS
8. IFF CONTROL PANEL
9. SIF CONTROL PANEL
10. OXYGEN CONTROL PANELS

REAR COCKPIT

Dual Control Left Console

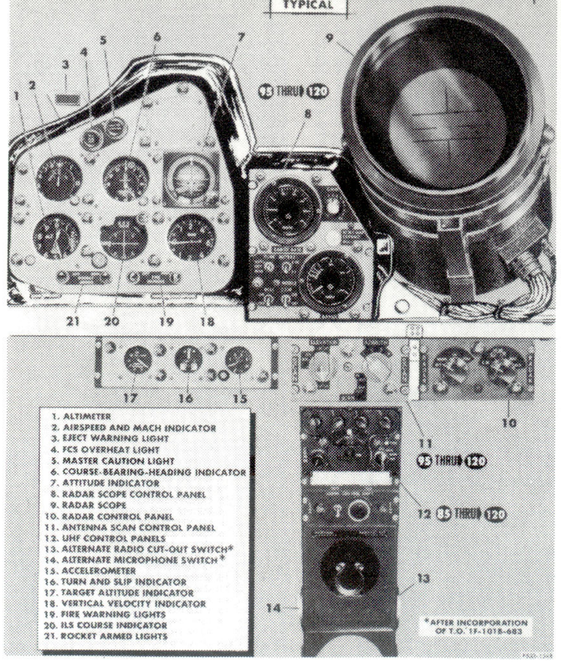
TYPICAL



1. CIRCUIT BREAKER PANEL
2. ANTI "G" SUIT PRESSURE REGULATOR
3. CANOPY SWITCH
4. RUDDER TRIM SWITCH
5. COCKPIT LIGHTS CONTROL PANEL
6. IDENTIFICATION LIGHT SWITCH
7. ENGINE PRESSURE RATIO GAGES
8. EXHAUST TEMPERATURE GAGES
9. TACHOMETERS
10. EMERGENCY BRAKE HANDLE
11. ENGINE MASTER SWITCHES
12. FUEL QUANTITY GAGE
13. THROTTLE QUADRANT
14. VHF CONTROL PANELS
15. DATA-LINK CONTROL PANELS

Dual Control Instrument Panel

TYPICAL

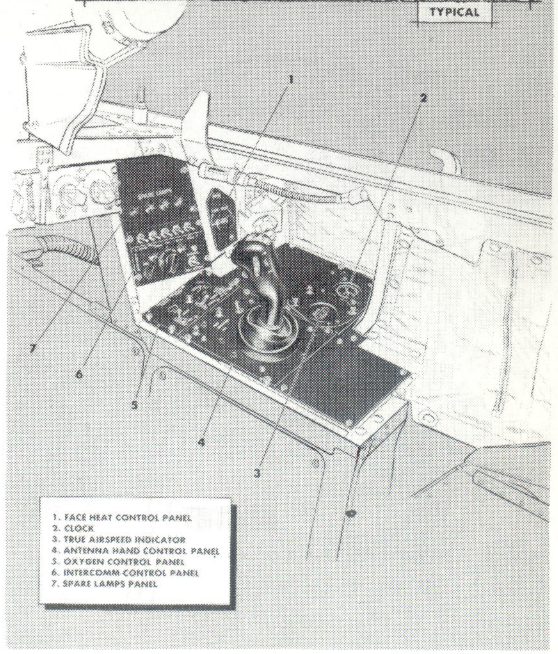


1. ALTIMETER
2. AIRSPEED AND MACH INDICATOR
3. EJECT WARNING LIGHT
4. FCS OVERHEAT LIGHT
5. MASTER CAUTION LIGHT
6. COURSE-BEARING-HEADING INDICATOR
7. ATTITUDE INDICATOR
8. RADAR SCOPE CONTROL PANEL
9. RADAR SCOPE
10. RADAR CONTROL PANEL
11. ANTENNA SCAN CONTROL PANEL
12. UHF CONTROL PANELS
13. ALTERNATE RADIO CUT-OUT SWITCH*
14. ALTERNATE MICROPHONE SWITCH*
15. ACCELEROMETER
16. TURN AND SLIP INDICATOR
17. TARGET ALTITUDE INDICATOR
18. VERTICAL VELOCITY INDICATOR
19. FIRE WARNING LIGHTS
20. ILS COURSE INDICATOR
21. ROCKET ARMED LIGHTS

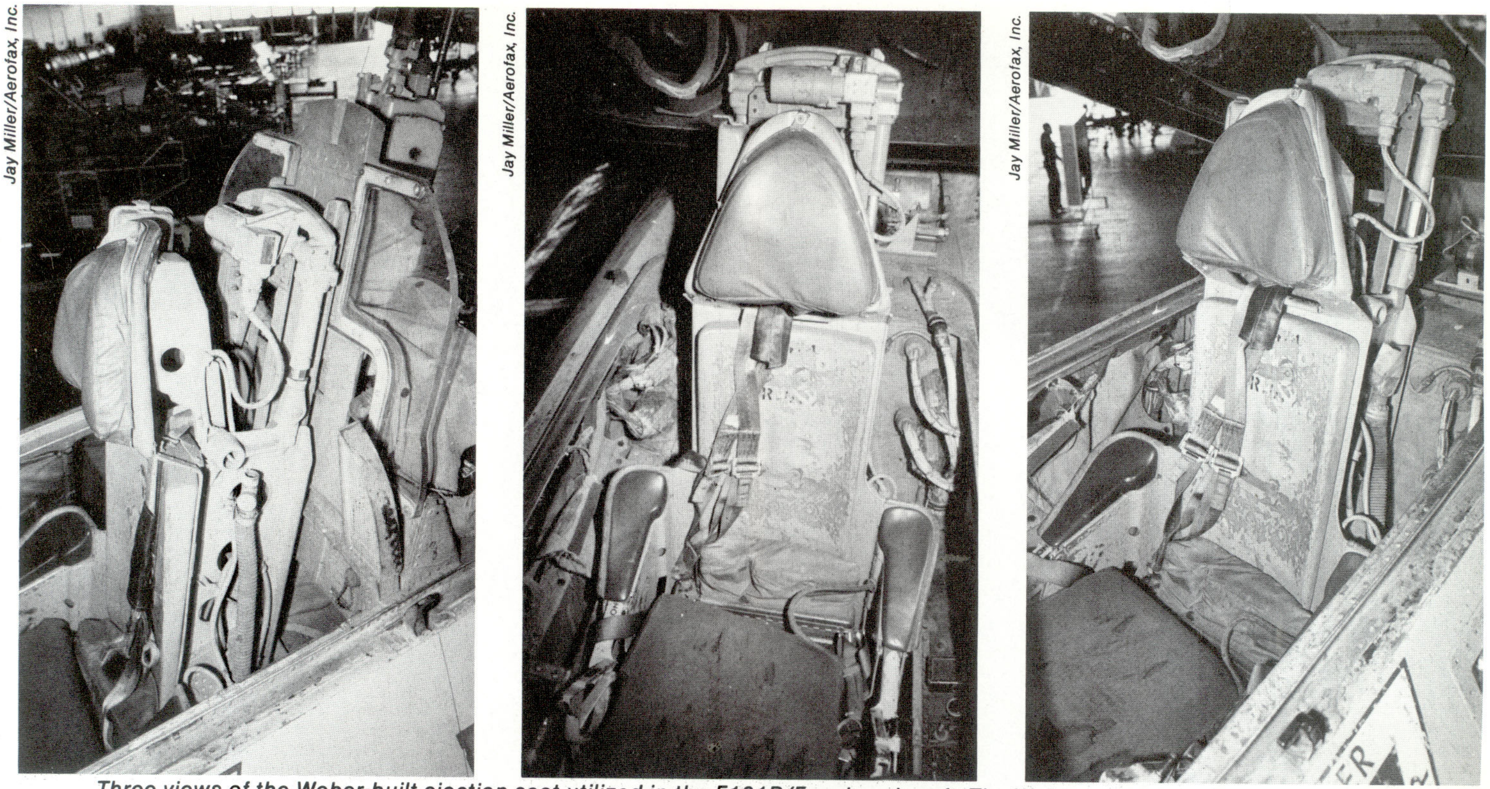
*AFTER INCORPORATION OF T.O. 1F-101B-683

Dual Control Right Console

TYPICAL



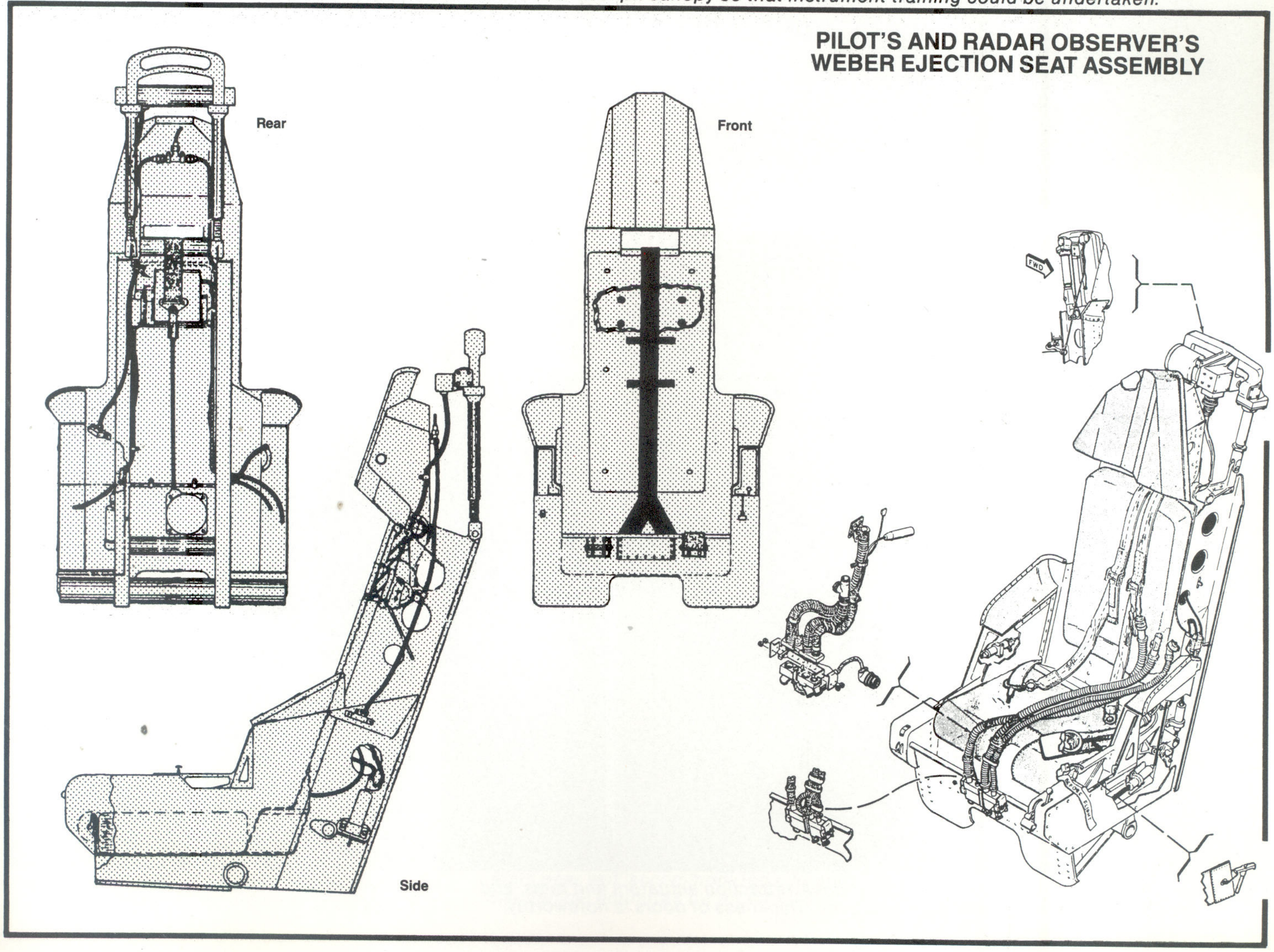
1. FACE HEAT CONTROL PANEL
2. CLOCK
3. TRUE AIRSPEED INDICATOR
4. ANTENNA HAND CONTROL PANEL
5. OXYGEN CONTROL PANEL
6. INTERCOMM CONTROL PANEL
7. SPARE LAMPS PANEL

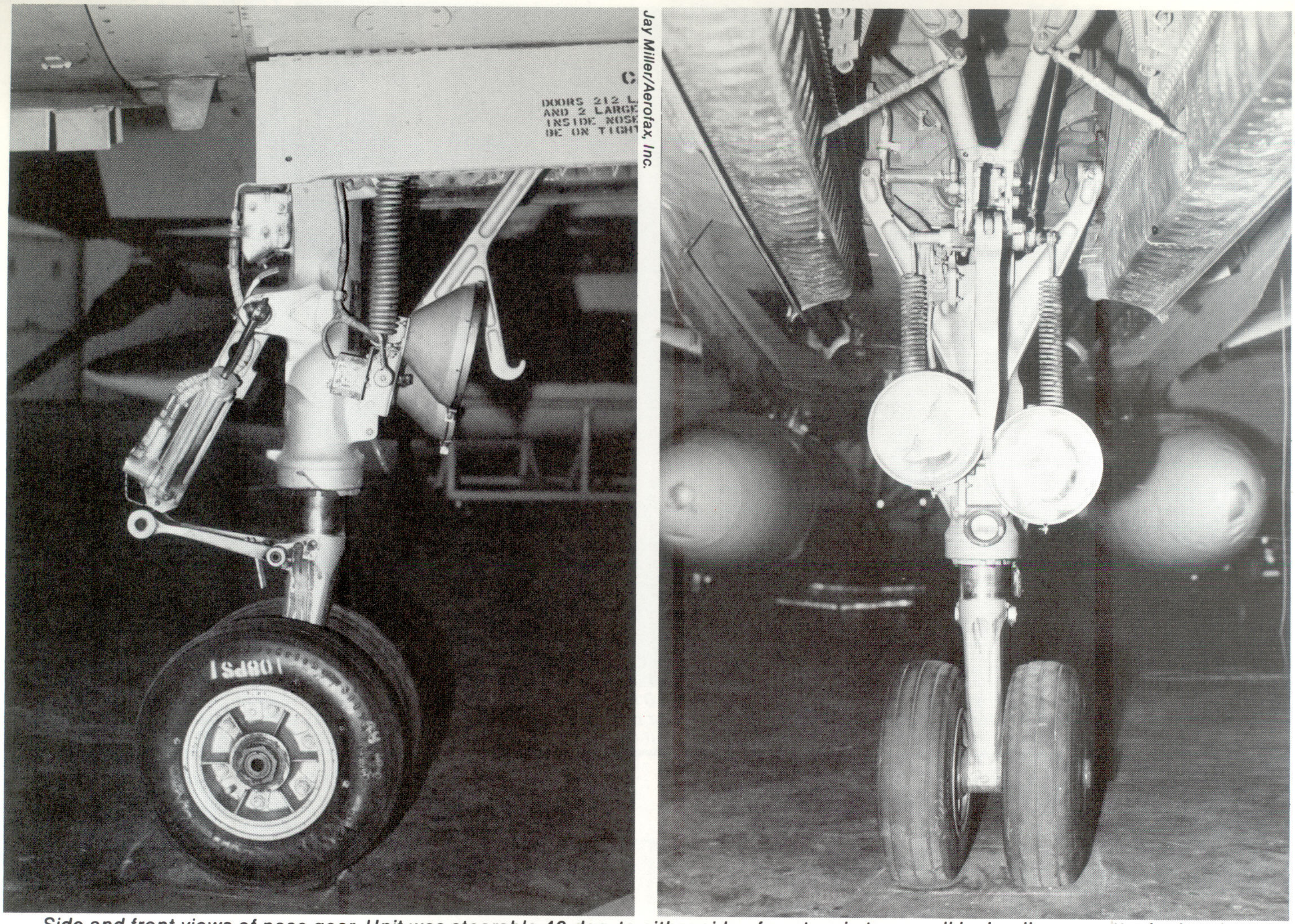

Jay Miller/Aerofax, Inc.

Jay Miller/Aerofax, Inc.

Jay Miller/Aerofax, Inc.

Three views of the Weber-built ejection seat utilized in the F101B/F series aircraft. The Weber seat was not zero-zero and its capabilities were marginal at low altitude. Wind blast protection for back seat occupant was provided by special glass shield. F-101F's usually had a fabric hood mounted under the rear cockpit canopy so that instrument training could be undertaken.

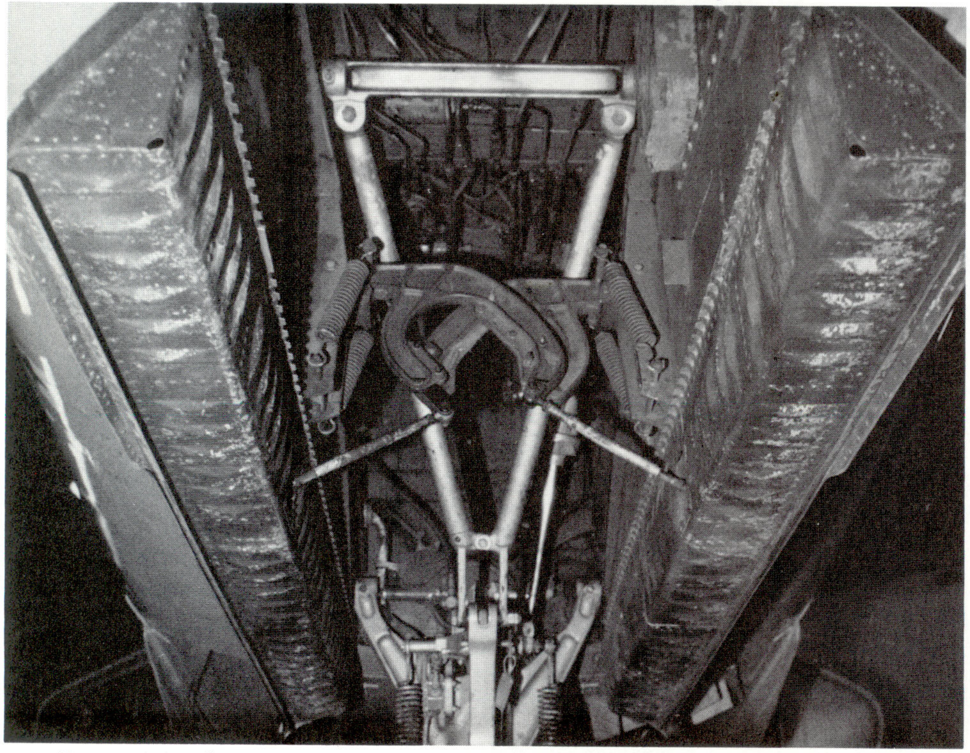

PILOT'S AND RADAR OBSERVER'S WEBER EJECTION SEAT ASSEMBLY



Jay Miller/Aerofax, Inc.

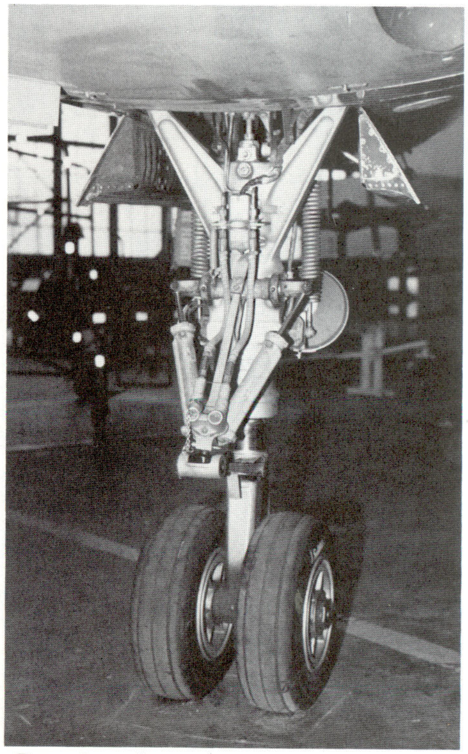
Jay Miller/Aerofax, Inc.

Side and front views of nose gear. Unit was steerable 40-deg. to either side of center via two small hydraulic rams attached to the torque link. Landing and taxi lights were attached to the main gear strut which in turn was hinged as a single unit to retract into the nose gear well.



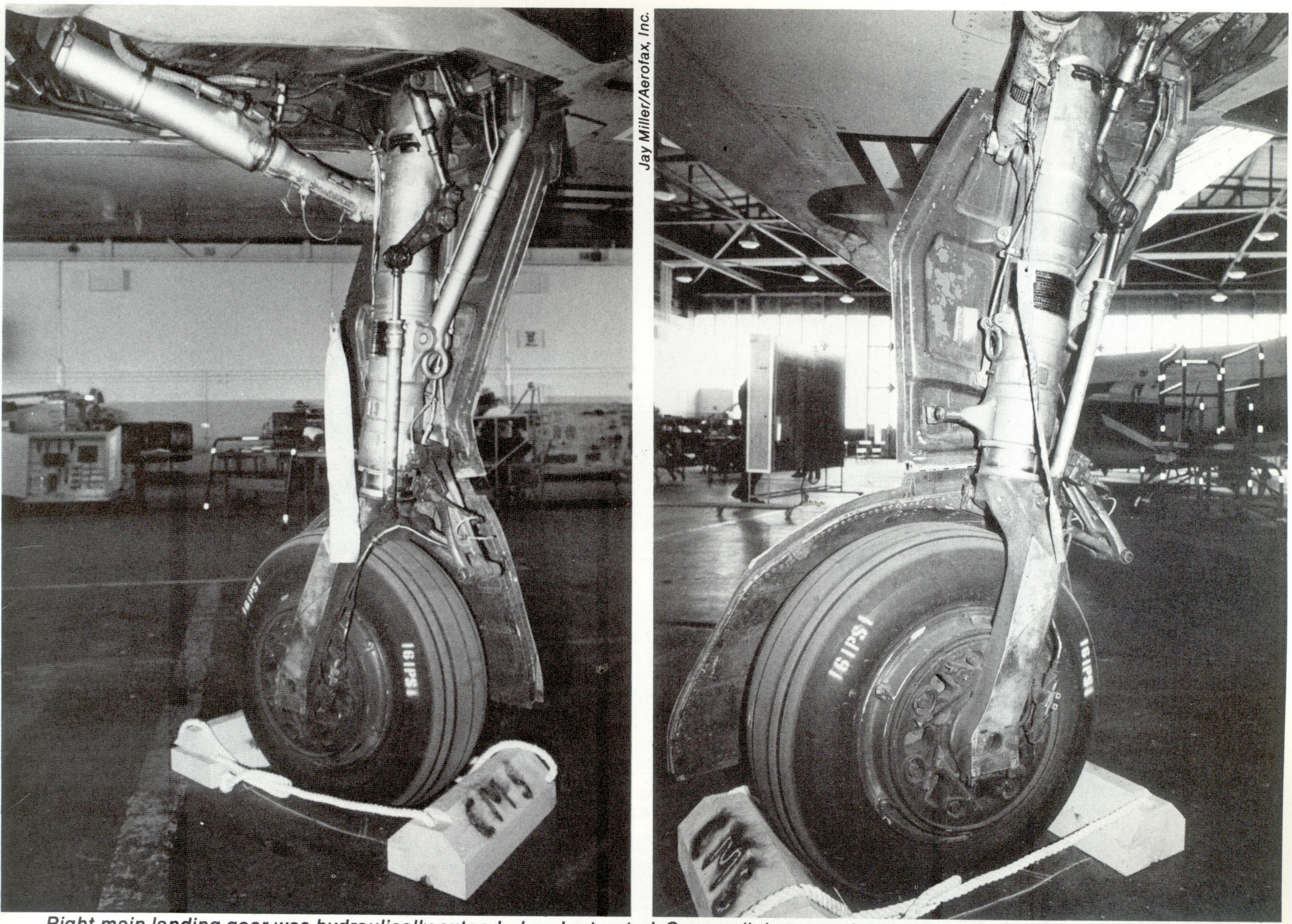
Jay Miller/Aerofax, Inc.

Nose gear well accommodated hydraulic lines, retraction actuators and rams, and mechanicals for nose gear door actuation. Thickness of doors is noteworthy.



Jay Miller/Aerofax, Inc.

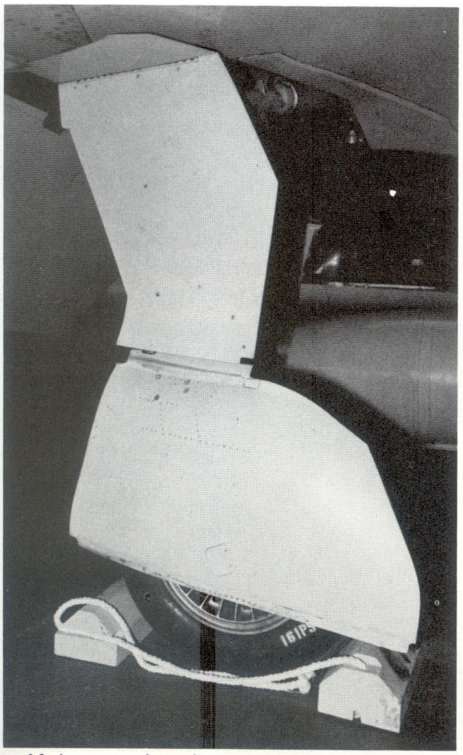
Rear view of nose gear provides detail of steering rams and associated hydraulic lines.



Jay Miller/Aerofax, Inc.

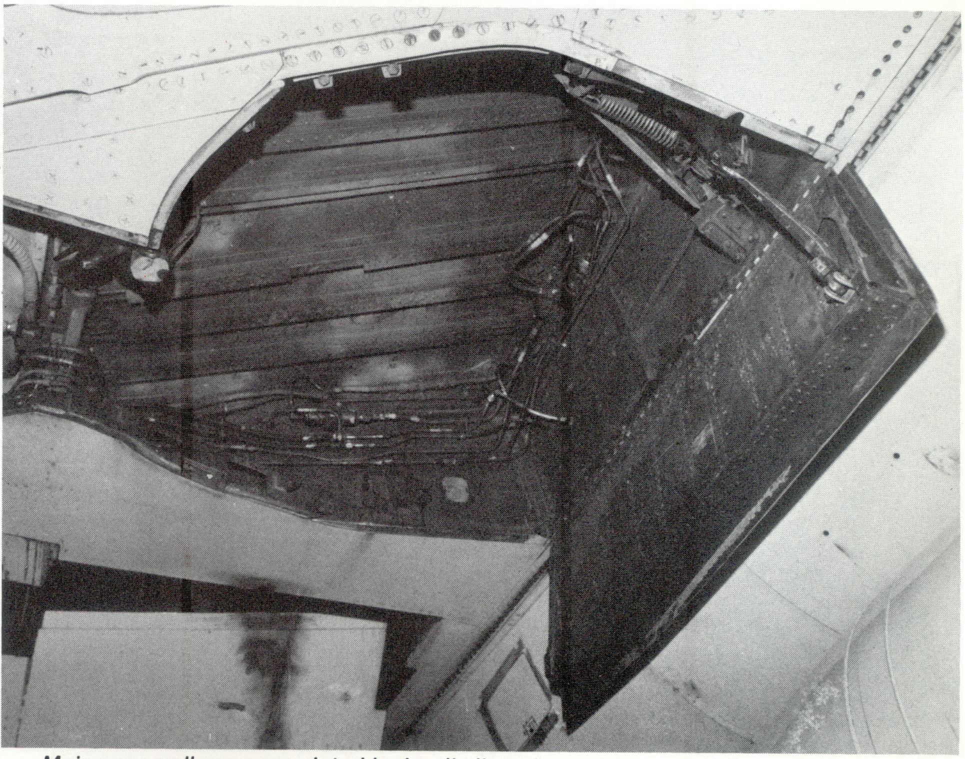
Jay Miller/Aerofax, Inc.

Right main landing gear was hydraulically extended and retracted. Gear well door consisted of four sections, three of which were directly attached to the actual gear unit. A fourth door was attached to the fuselage. Segmented rotor type brakes were mounted integrally with the wheels.



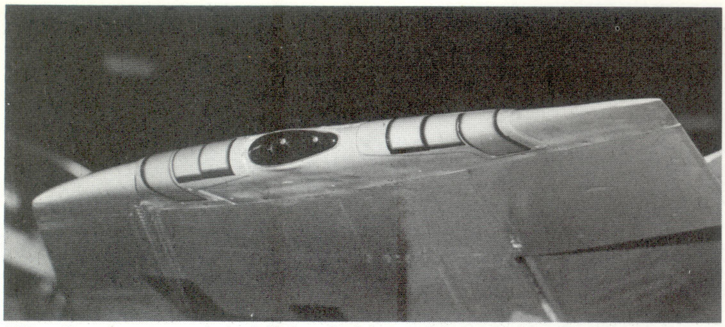
Jay Miller/Aerofax, Inc.

Main gear door is segmented into four parts and is articulated to provide clearance during gear retraction and extension.



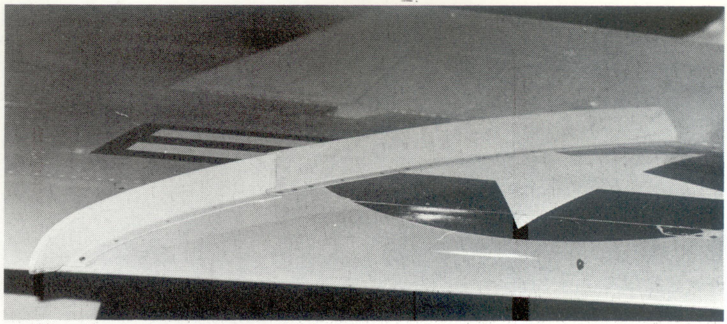
Jay Miller/Aerofax, Inc.

Main gear well accommodated hydraulic lines for main gear and flap actuation, and mechanical actuators for attached gear well door assembly. Interior of gear well was usually painted green.



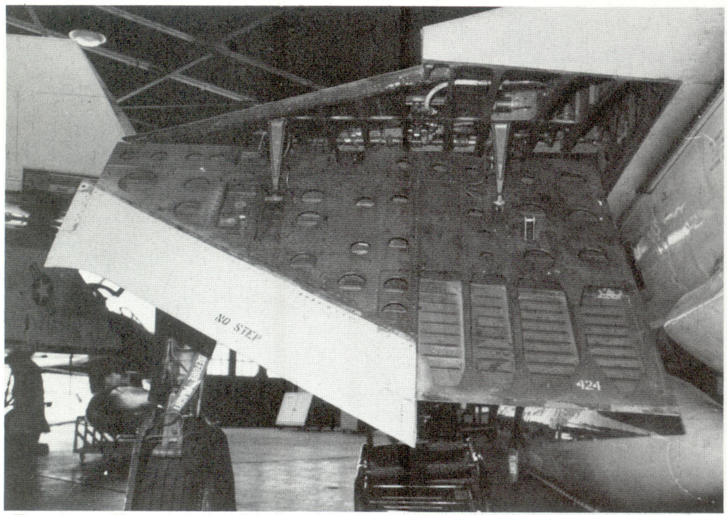
Jay Miller/Aerofax, Inc.

Wingtip accommodated flying lights and tape lights. The latter were used primarily for night formation flying reference.



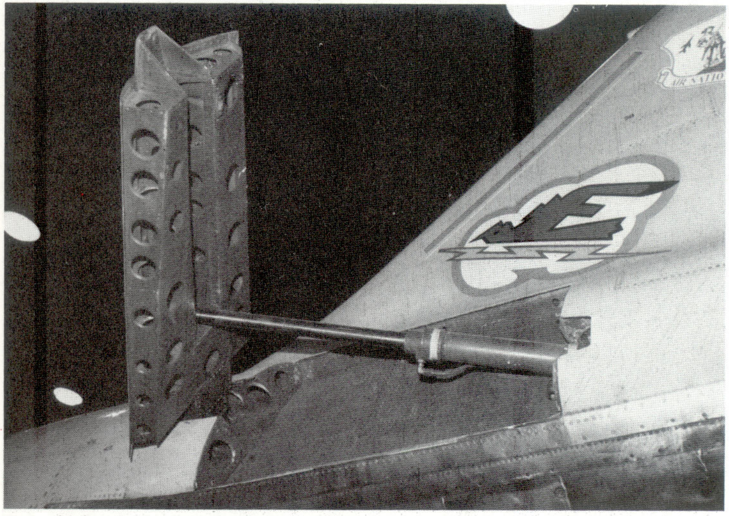
Jay Miller/Aerofax, Inc.

Wing fences were mounted at approximately mid-span on each wing. These served to alleviate aerodynamic problems associated with span-wise flow.



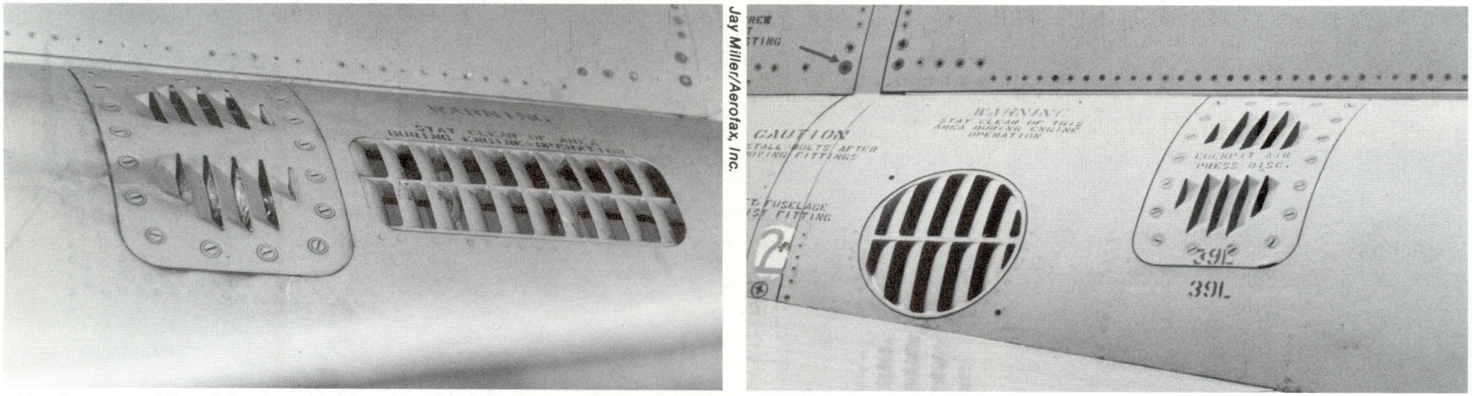
Jay Miller/Aerofax, Inc.

Zap-type flaps were single-piece hydraulically actuated units. Wing trailing edge segment served as stiffener for portion of flap surface while also adding to gross area.



Jay Miller/Aerofax, Inc.

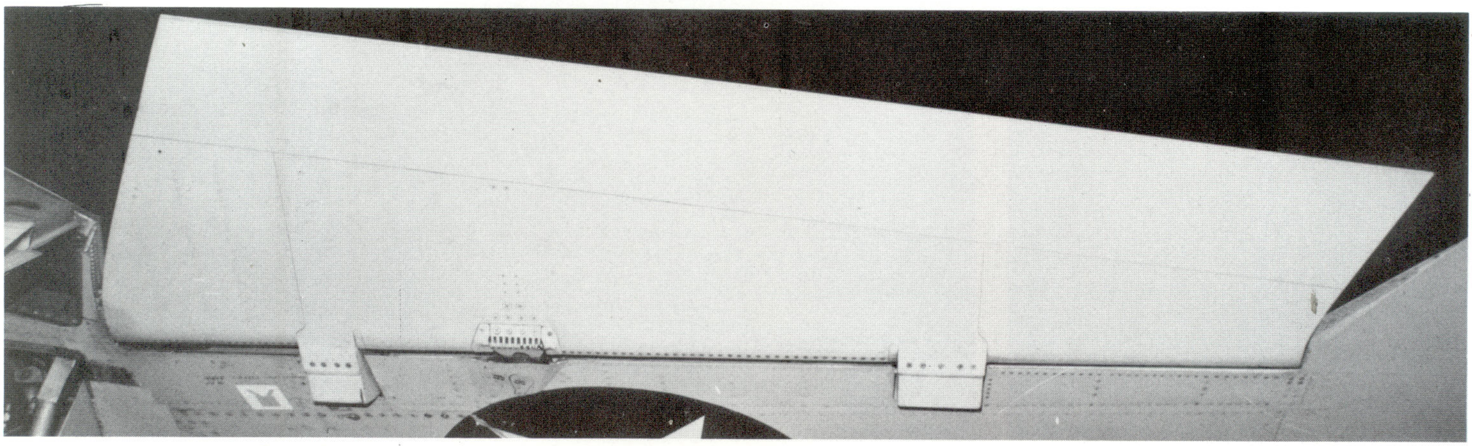
Airbrakes were hydraulically actuated and could be utilized throughout much of the F-101B's flight envelope.



Jay Miller/Aerofax, Inc.

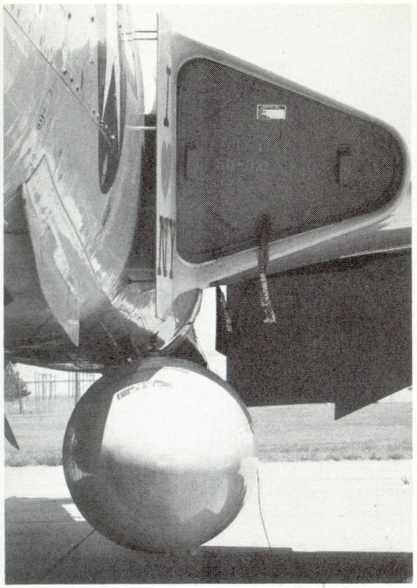
Jay Miller/Aerofax, Inc.

Vents were utilized for hot air bleed and cockpit pressurization discharge. Vents shown were located over wing center section. Vents on left were located on left side of aircraft, and vents on right, on right side.



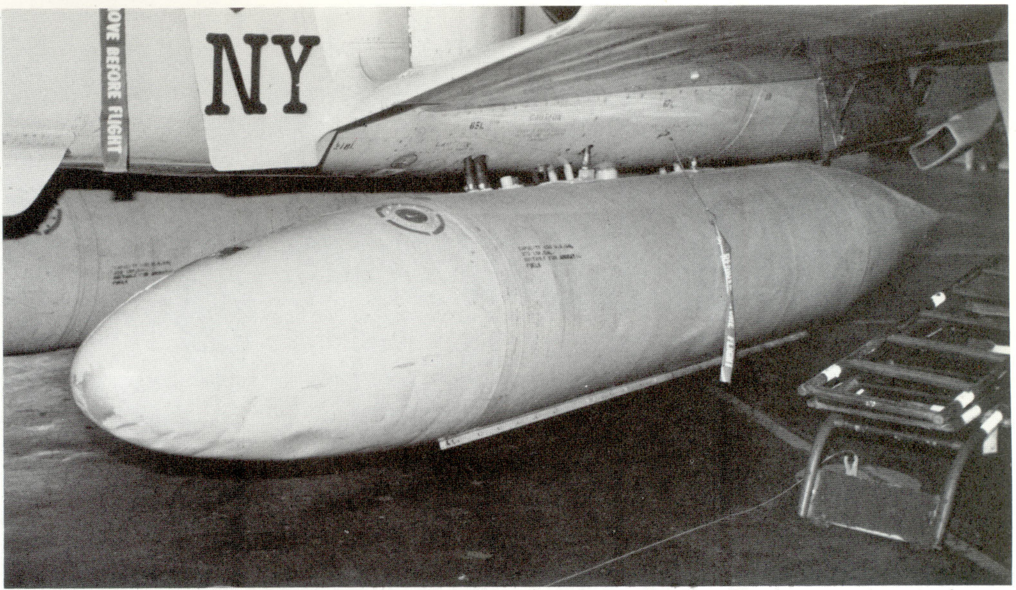
Jay Miller/Aerofax, Inc.

Ailerons and all other F-101B control surfaces were hydraulically and/or mechanically boosted. Ailerons were equipped with large mass balances to negate possibility of flutter at high Mach numbers.



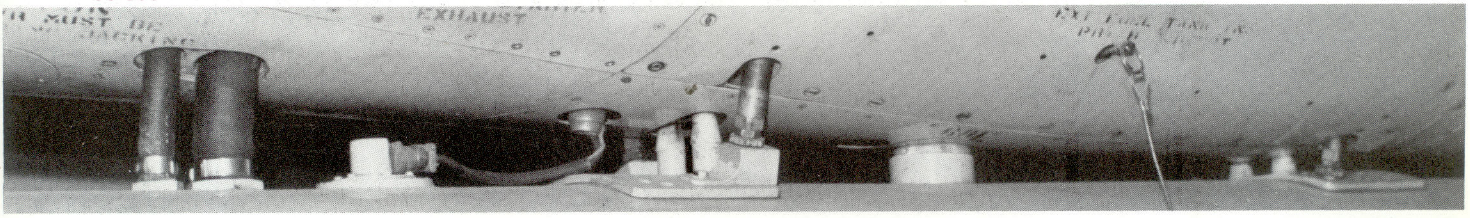
Jay Miller/Aerofax, Inc.

Proximity of drop tank to fuselage and stiffening rods of fixed ramp can be seen in front view.



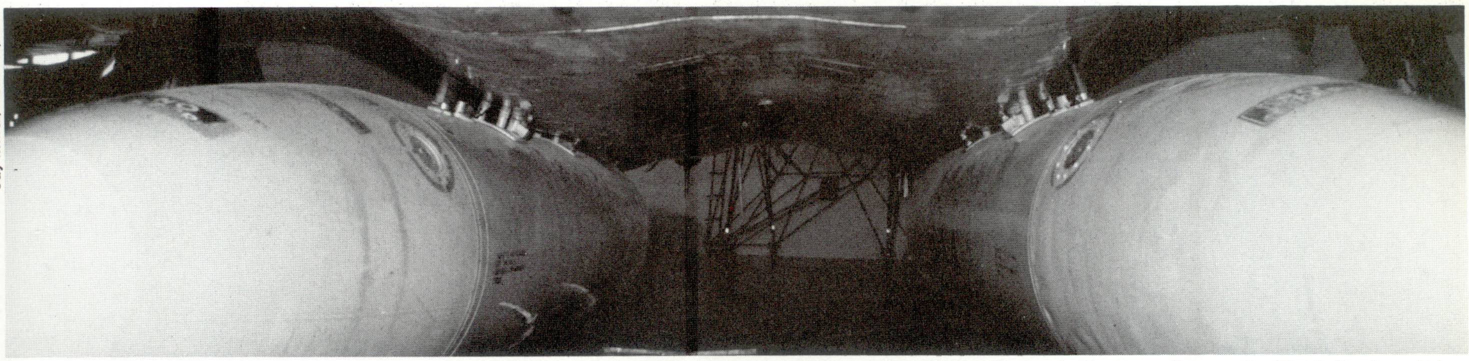
Jay Miller/Aerofax, Inc.

Drop tank was not attached to fuselage by pylon, but rather by direct connectors and stabilizing pins. Fuel tank capacity was 450 US gallons or 375 IMP gallons.



Jay Miller/Aerofax, Inc.

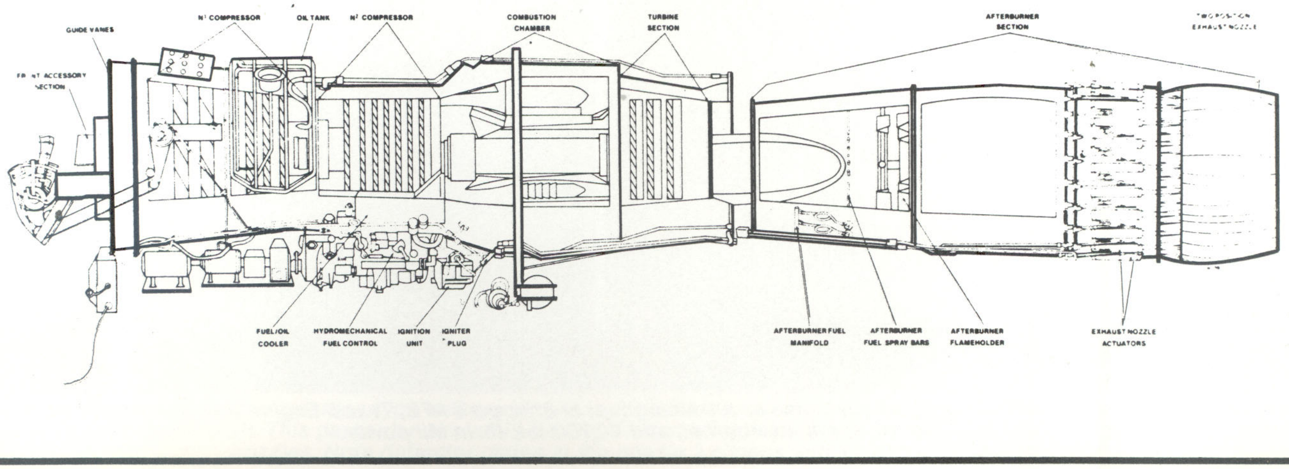
There were several fuel, mechanical, and electrical connectors associated with each drop tank. The fuel was syphoned via rubber hoses at left. Electrical connections were part of valve actuation system. Stabiliziing pins were adjustable. Tanks were jettisonable.

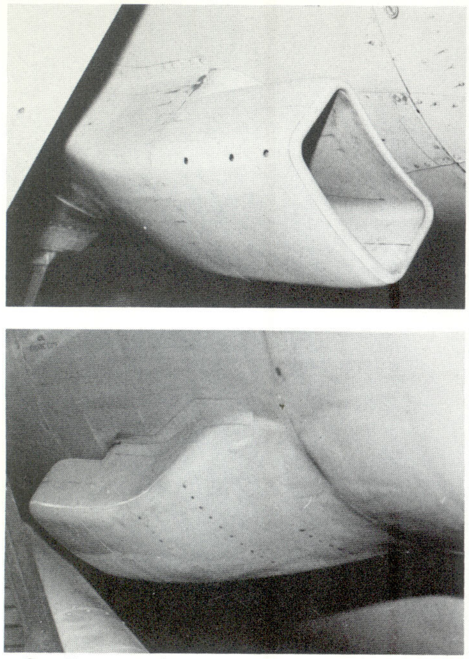


Jay Miller/Aerofax, Inc.

Fuselage/drop tank clearances were minimal. This was a result of aircraft takeoff and landing rotation requirements. Tank horizontal spacing had been optimized to permit lowest drag factor in this configuration.

PRATT & WHITNEY J57-PW-53/55 CUTAWAY

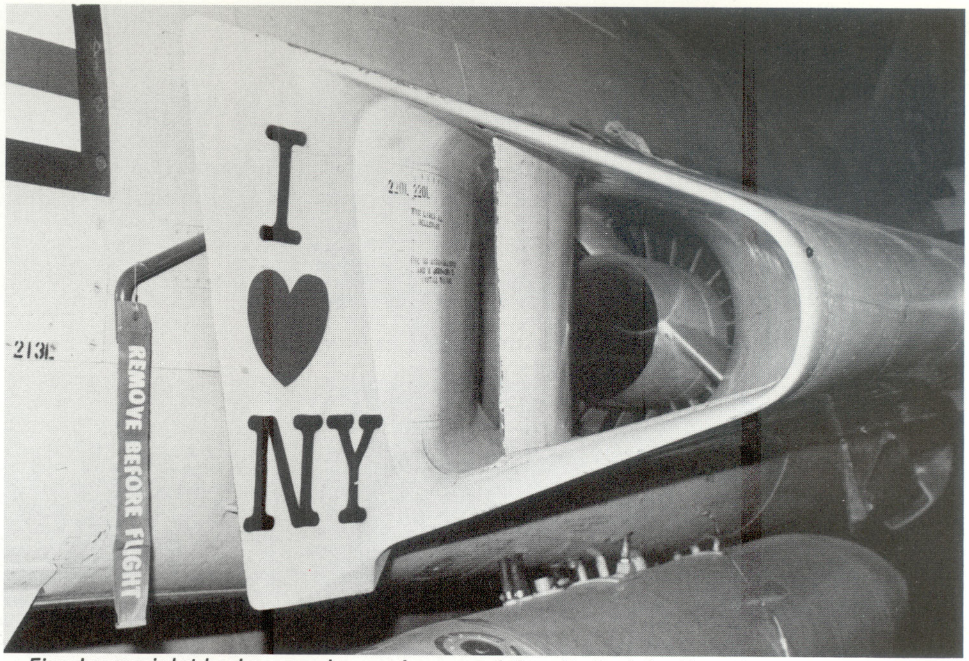




Jay Miller/Aerofax, Inc.

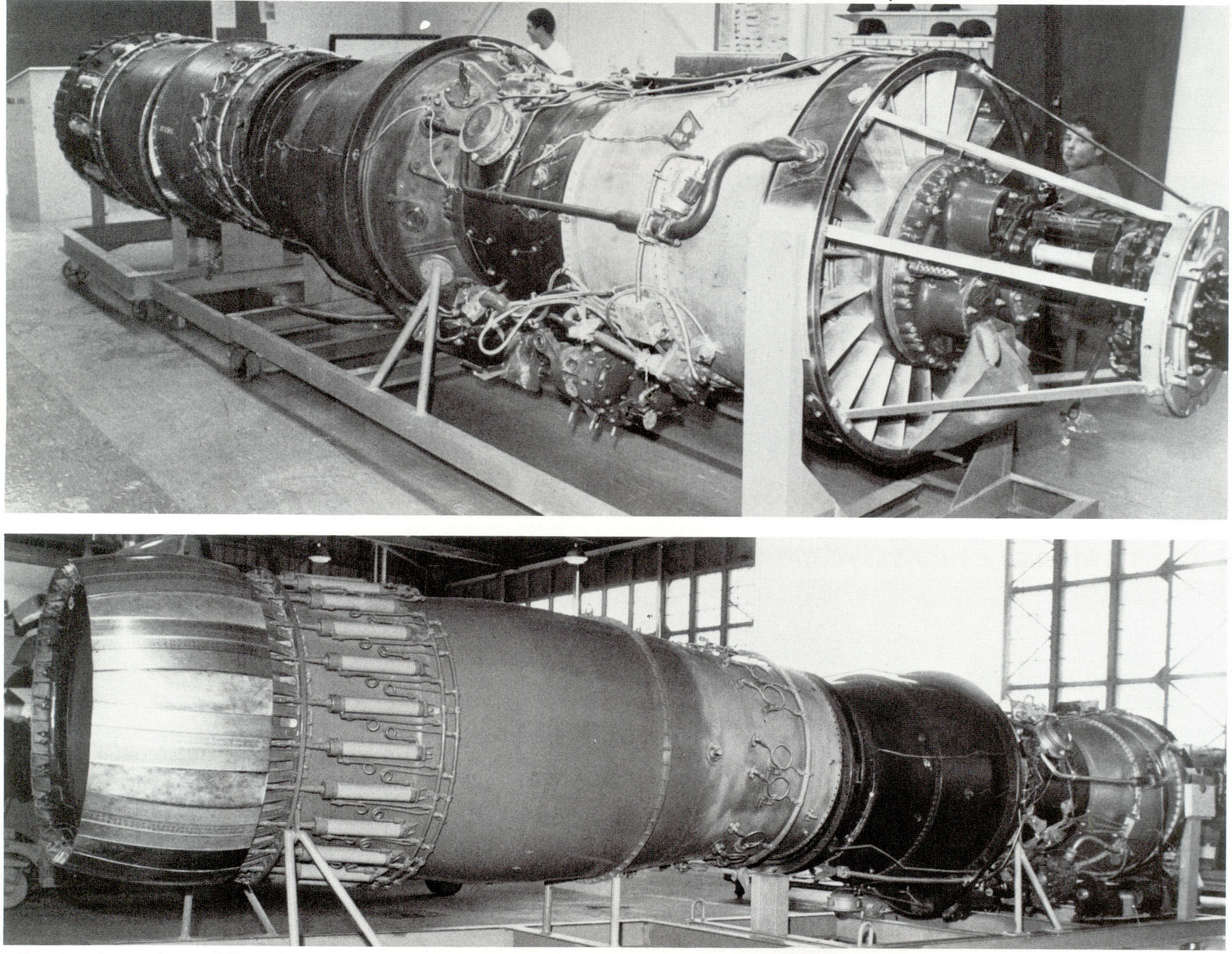
Jay Miller/Aerofax, Inc.

Cooling requirements for aft engine bay were met by two large scoops located near forward end of afterburner.



Jay Miller/Aerofax, Inc.

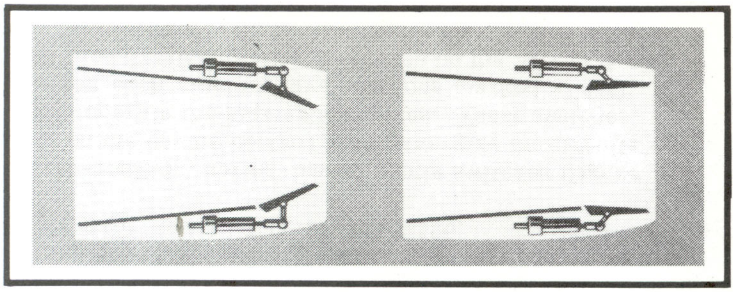
Fixed ramp inlet had no moving surfaces and thus limited the F-101's maximum speed potential to just under Mach 2. Splitter plates bled boundary layer air for venting. Engine compressor section bullet was curved to point into intake airstream.



Jay Miller/Aerofax, Inc.

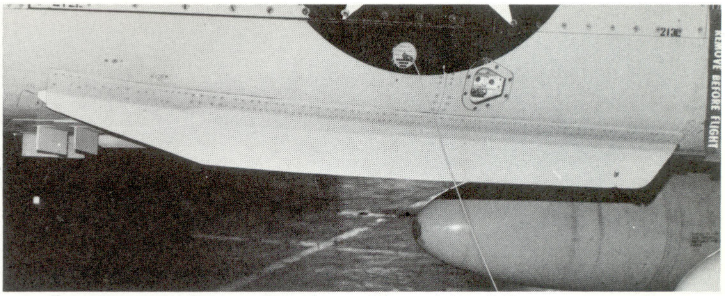
Jay Miller/Aerofax, Inc.

Front and rear views of Pratt & Whitney J57-P-55 in use as a training tool at Sheppard AFB, Texas. Engine was nominally rated at 16,900 lbs. th. in full afterburner, and 10,700 lbs. th. in Mil power.



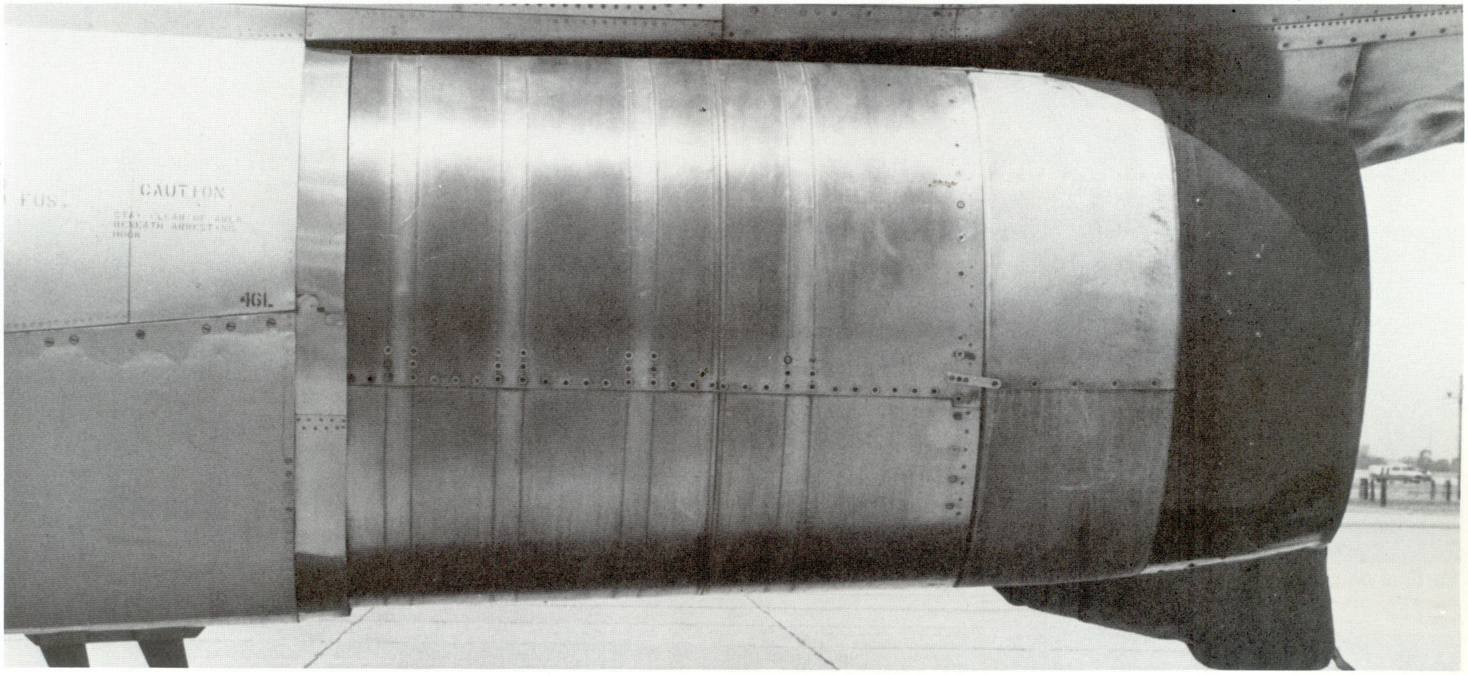
Exhaust nozzles were of the two position type and were open when the afterburner was operating and closed when it was not. Nozzle actuation was hydraulic.

Jay Miller/Aerofax, Inc.



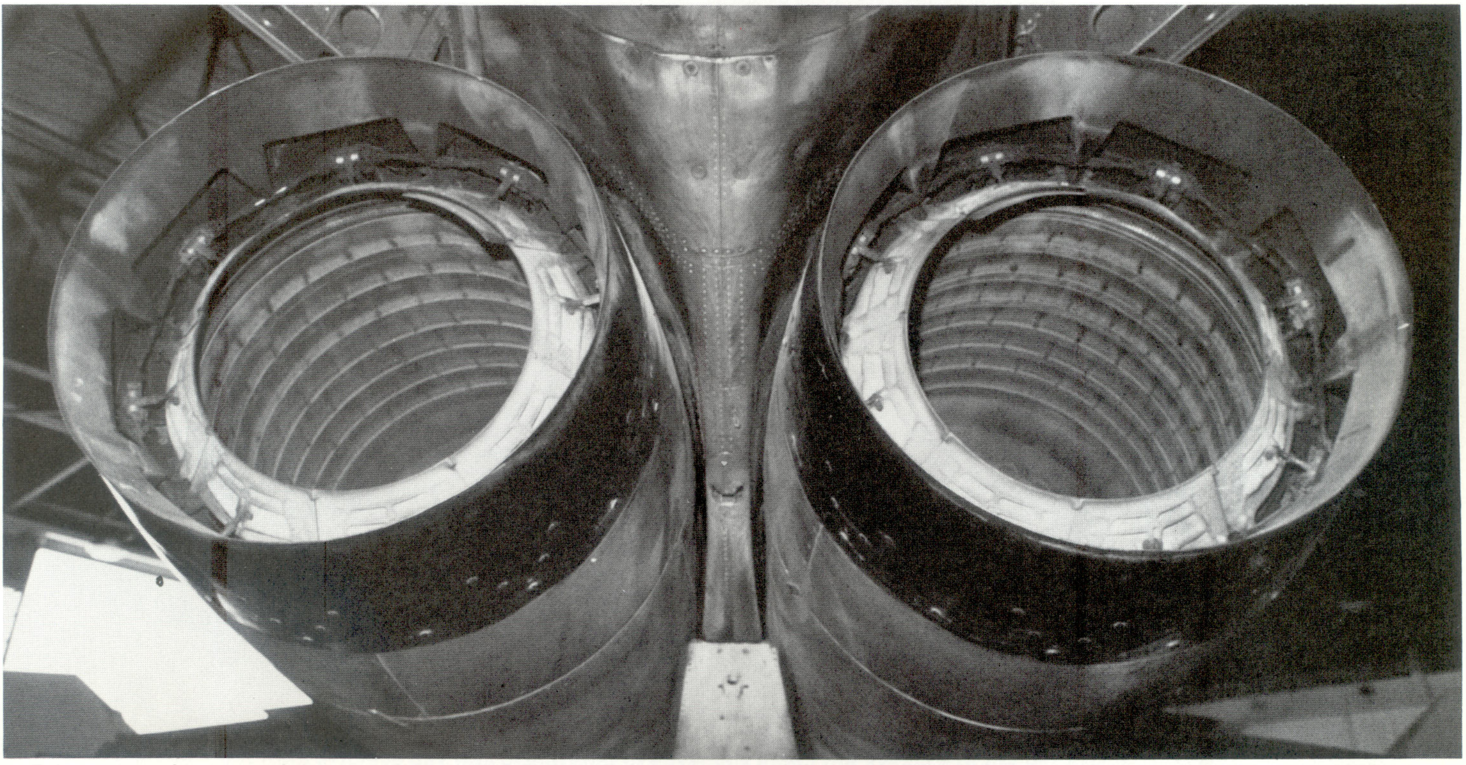
Fuselage strake mounted on either side of the weapons bay prevented a negative effect on the intake airstream caused by weapons exposure and weapons exhaust gases.

Jay Miller/Aerofax, Inc.

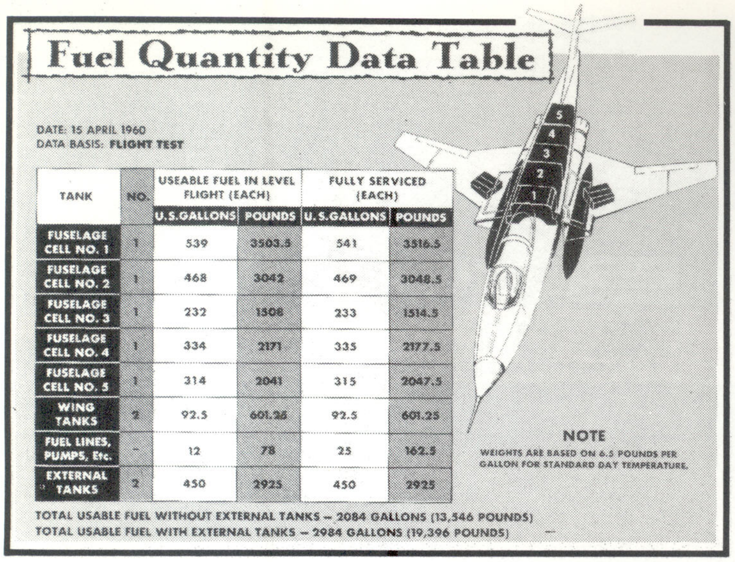


Engine exhaust pipes and nozzles were encased in steel tubes that were normally left unpainted in consideration of high temperatures. Long exhaust (shown) differed considerably from early short exhaust found on some J57-P-53 powered aircraft.

Jay Miller/Aerofax, Inc.



Exhaust nozzles were of the two position type and are shown in non-afterburner mode. High temperatures dictated the use of titanium in the aft section of the aircraft. This particular aircraft is lacking the arresting hook normally found attached to center keel between the nozzles. Note deflector plates at the nozzle 1 o'clock and 11 o'clock positions.



Fuel Quantity Data Table

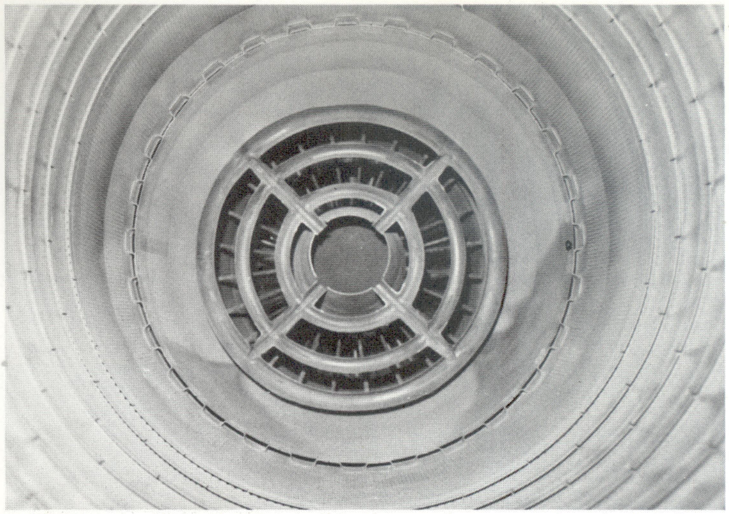
DATE: 15 APRIL 1960
DATA BASIS: **FLIGHT TEST**

TANK	NO.	USEABLE FUEL IN LEVEL FLIGHT (EACH)		FULLY SERVICED (EACH)	
		U.S.GALLONS	POUNDS	U.S.GALLONS	POUNDS
FUSELAGE CELL NO. 1	1	539	3503.5	541	3516.5
FUSELAGE CELL NO. 2	1	468	3042	469	3048.5
FUSELAGE CELL NO. 3	1	232	1508	233	1514.5
FUSELAGE CELL NO. 4	1	334	2171	335	2177.5
FUSELAGE CELL NO. 5	1	314	2041	315	2047.5
WING TANKS	2	92.5	601.25	92.5	601.25
FUEL LINES, PUMPS, Etc.	–	12	78	25	162.5
EXTERNAL TANKS	2	450	2925	450	2925

TOTAL USABLE FUEL WITHOUT EXTERNAL TANKS – 2084 GALLONS (13,546 POUNDS)
TOTAL USABLE FUEL WITH EXTERNAL TANKS – 2984 GALLONS (19,396 POUNDS)

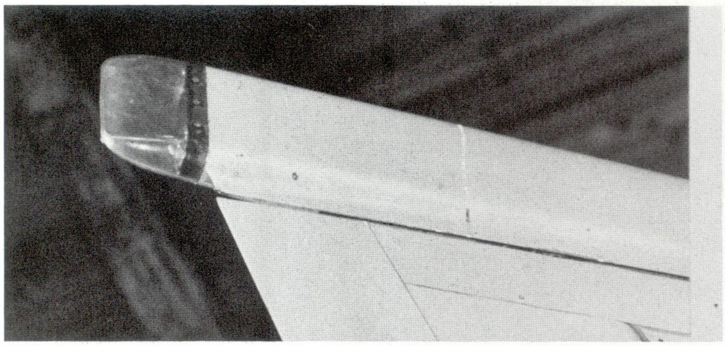
NOTE

WEIGHTS ARE BASED ON 6.5 POUNDS PER GALLON FOR STANDARD DAY TEMPERATURE.



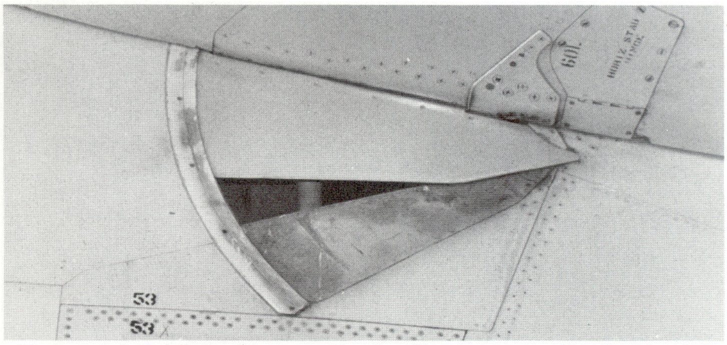
Jay Miller/Aerofax, Inc.

Afterburner flame holder and fuel spray bars were located at the forward section of the afterburner just behind the core section.



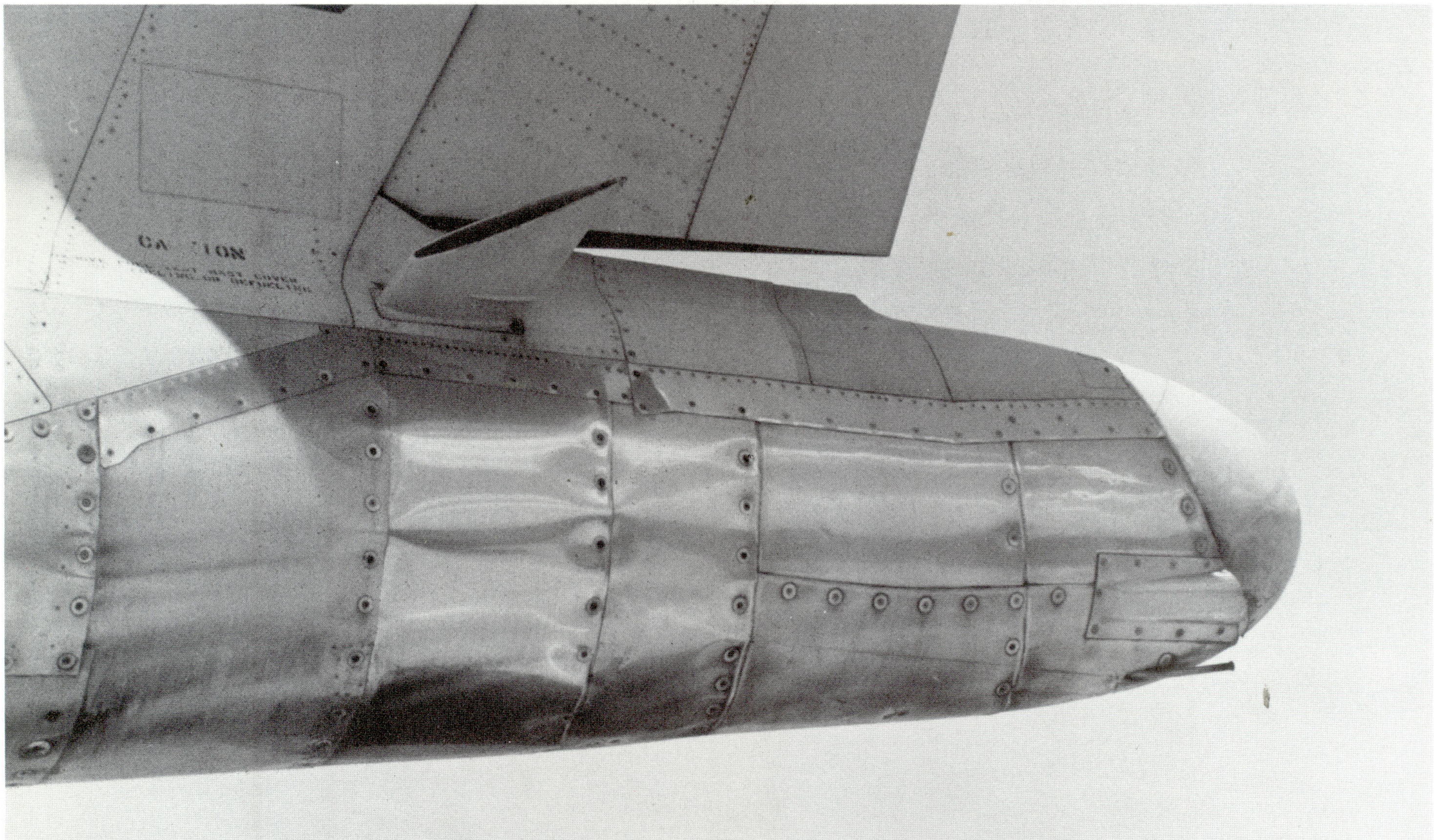
Jay Miller/Aerofax, Inc.

Vertical fin cap mounted flying light behind translucent cover on aft end.



Jay Miller/Aerofax, Inc.

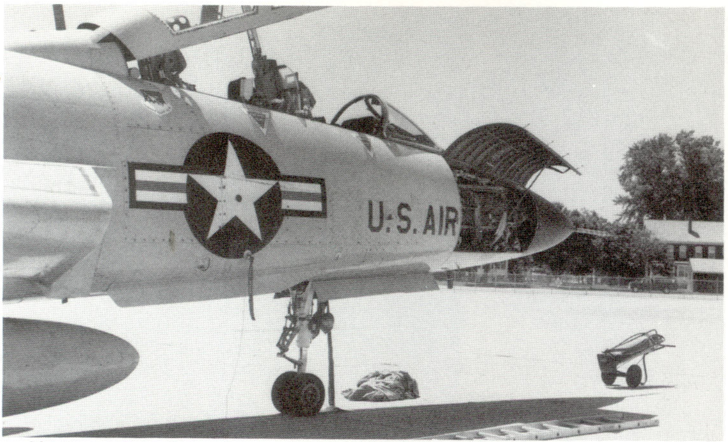
Horizontal stabilator hinge and actuating ram were located in slot near top of vertical fin. Slot cover was fixed and rotated with stabilator.



Jay Miller/Aerofax, Inc.

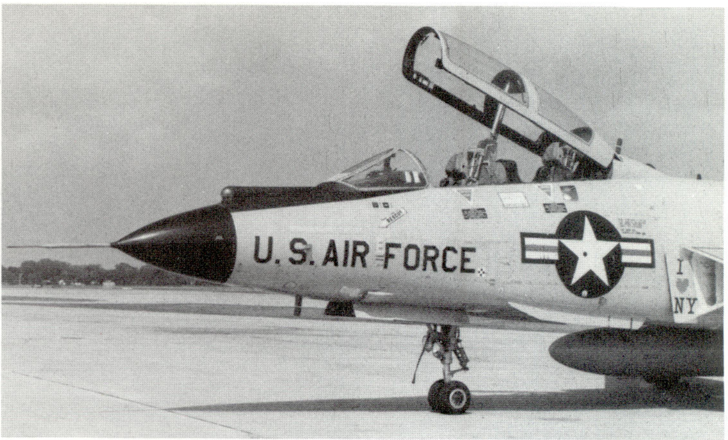
Empennage supported fuel dump nozzles and drag chute compartment with drag chute. Drag chute compartment door was hinged at top. Entire under surface of empennage was covered in titanium plating for heat protection.

George Cockle



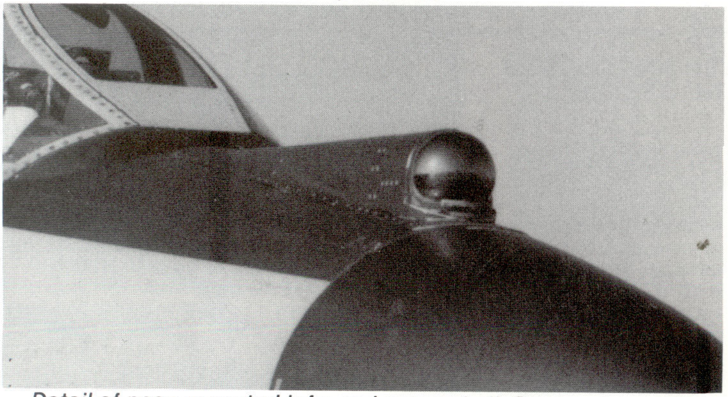
Nose compartment access panels were hinged and mirrored on both sides of the aircraft. Radar equipment was located in forward compartment.

George Cockle



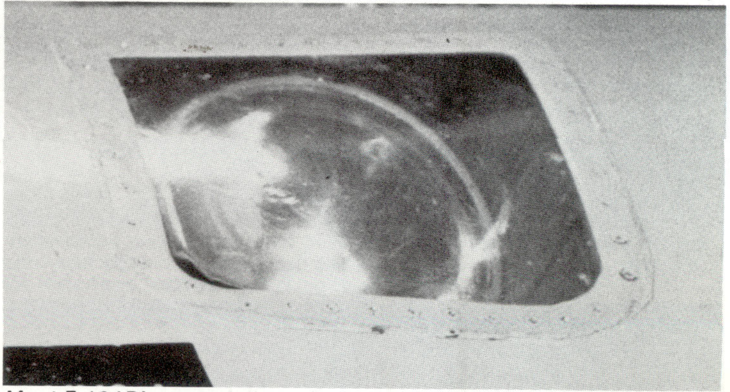
Nose section accommodated radar system and antenna, infra-red sensor ball and cryogenic equipment, cockpits and environmental control systems, the nose landing gear and well, and armament bay.

George Cockle



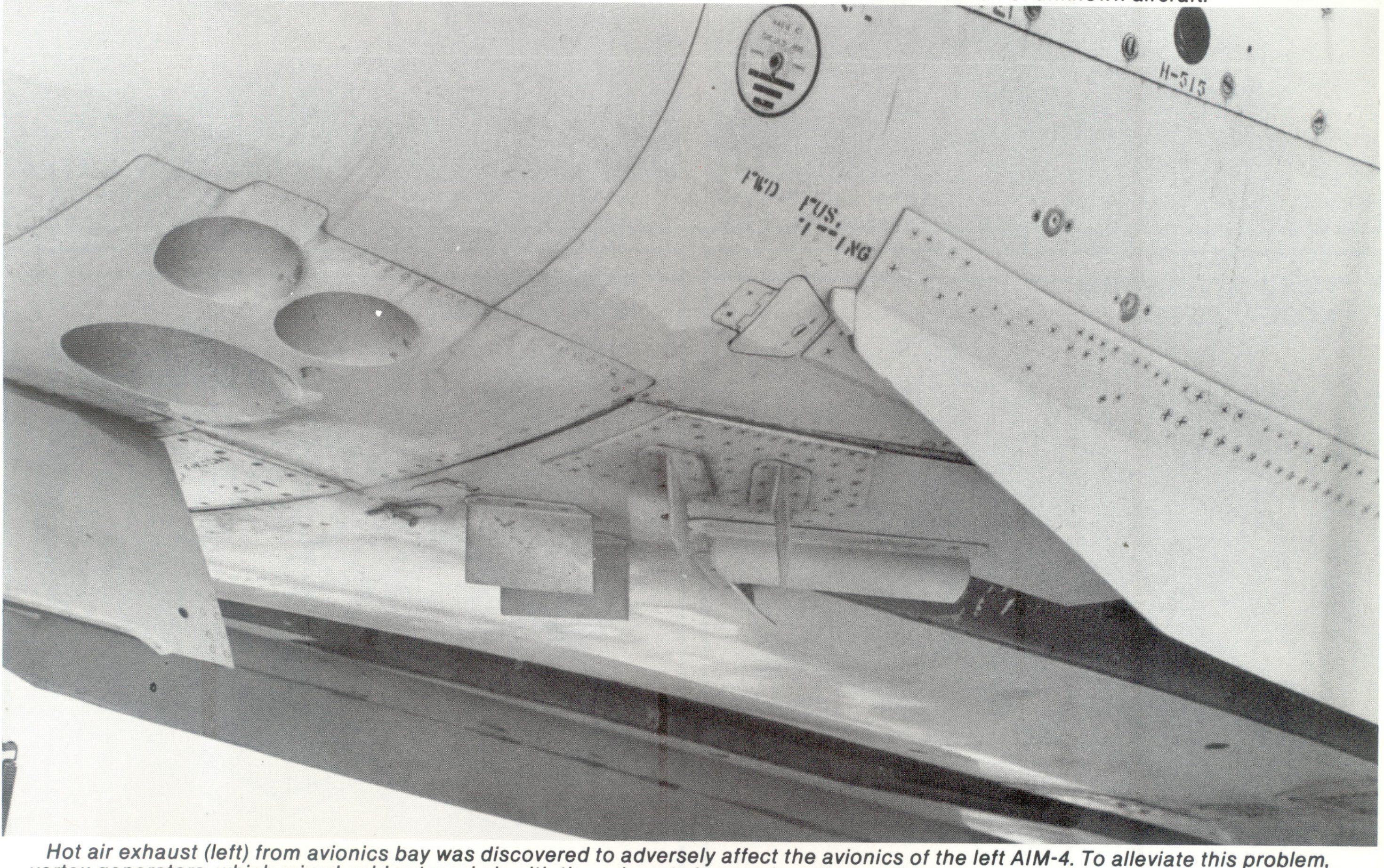
Detail of nose-mounted infra-red sensor ball. Cryogenic support gear was located in bay formerly occupied by the retractable inflight refueling boom.

Jay Miller/Aerofax, Inc.

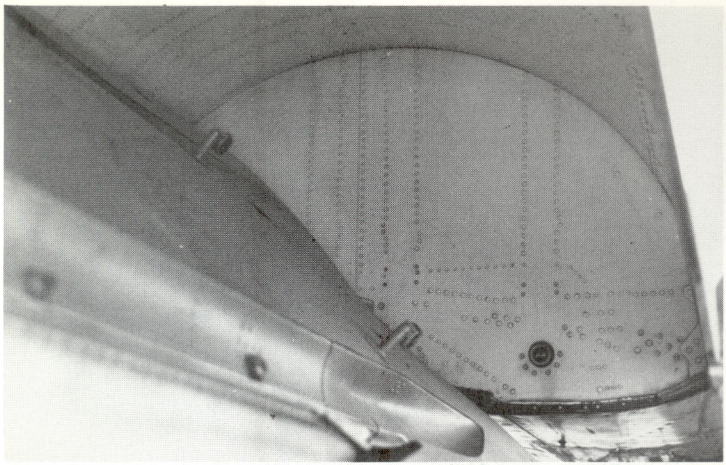


Most F-101B's were delivered with spotlight mounted just below aft cockpit canopy railing. This was used for night intercept visual identification of unknown aircraft.

Jay Miller/Aerofax, Inc.

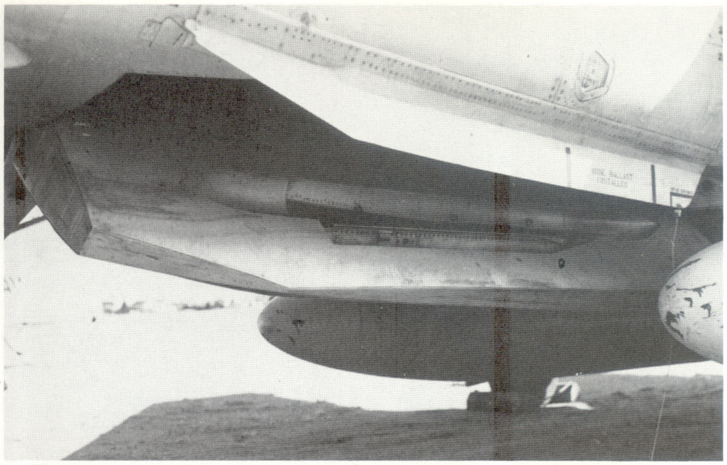


Hot air exhaust (left) from avionics bay was discovered to adversely affect the avionics of the left AIM-4. To alleviate this problem, vortex generators, which mixed cold external air with the exhaust air, were installed on the rotary weapons bay door ahead of the left slot only.



Jay Miller/Aerofax, Inc.

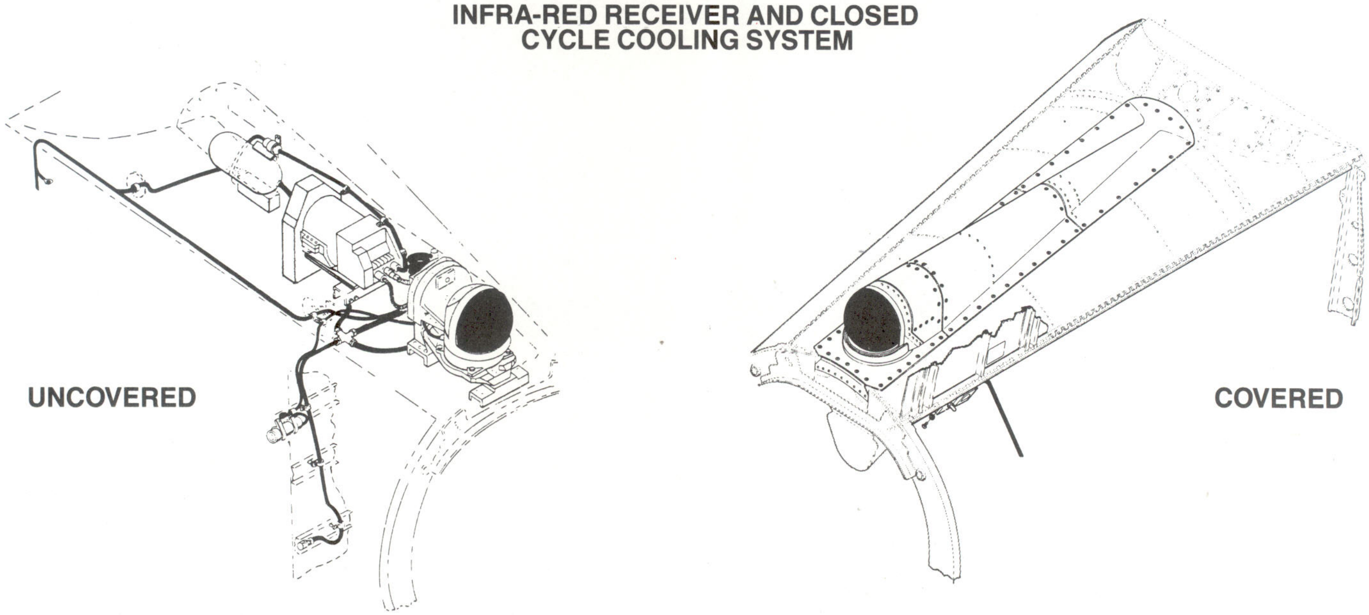
Weapons bay accommodated either two AIM-4 or two AIR-2 air-to-air missiles internally, depending on position of hydraulically actuated pallet door.



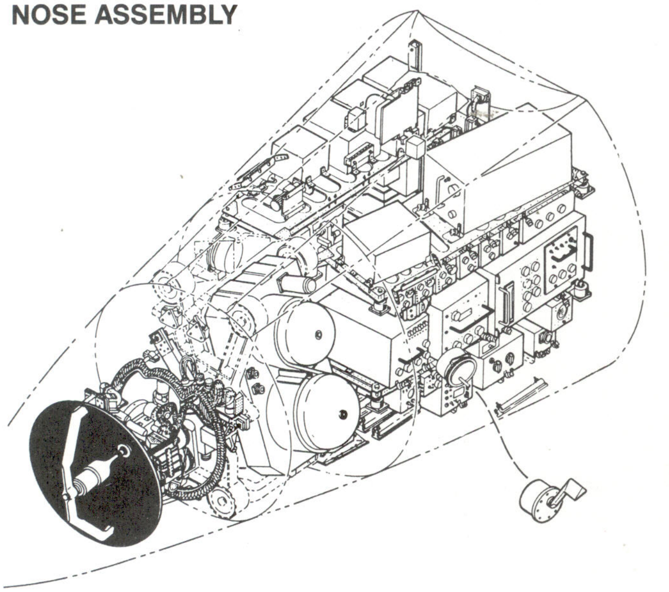
Mick Roth

Weapons bay door rotated on its lengthwise axis. AIM-4 side of door is shown. Missiles were mounted on articulated rails which extend into slipstream during actual missile launch.

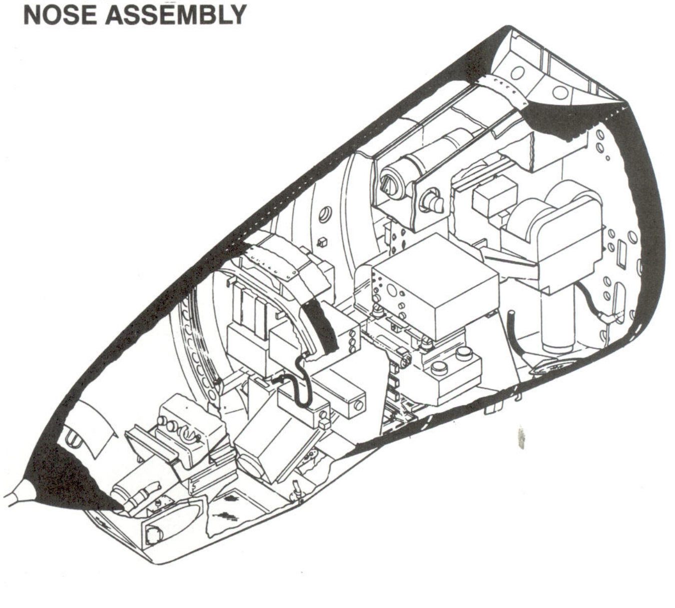
INFRA-RED RECEIVER AND CLOSED CYCLE COOLING SYSTEM



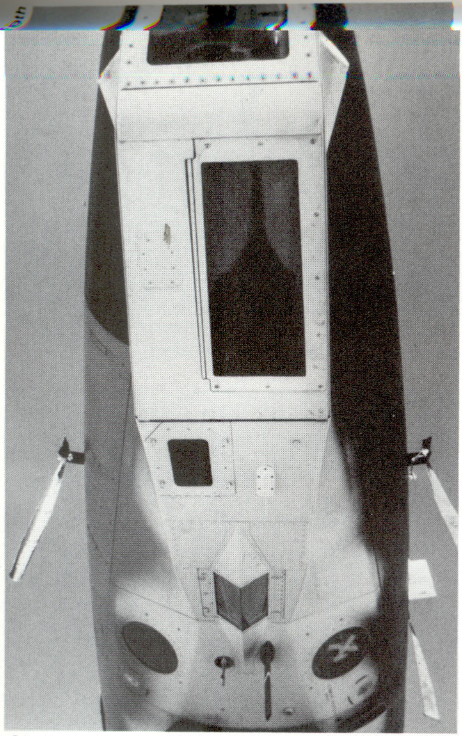
F-101B INTERCEPTOR NOSE ASSEMBLY



RF-101B RECCE NOSE ASSEMBLY

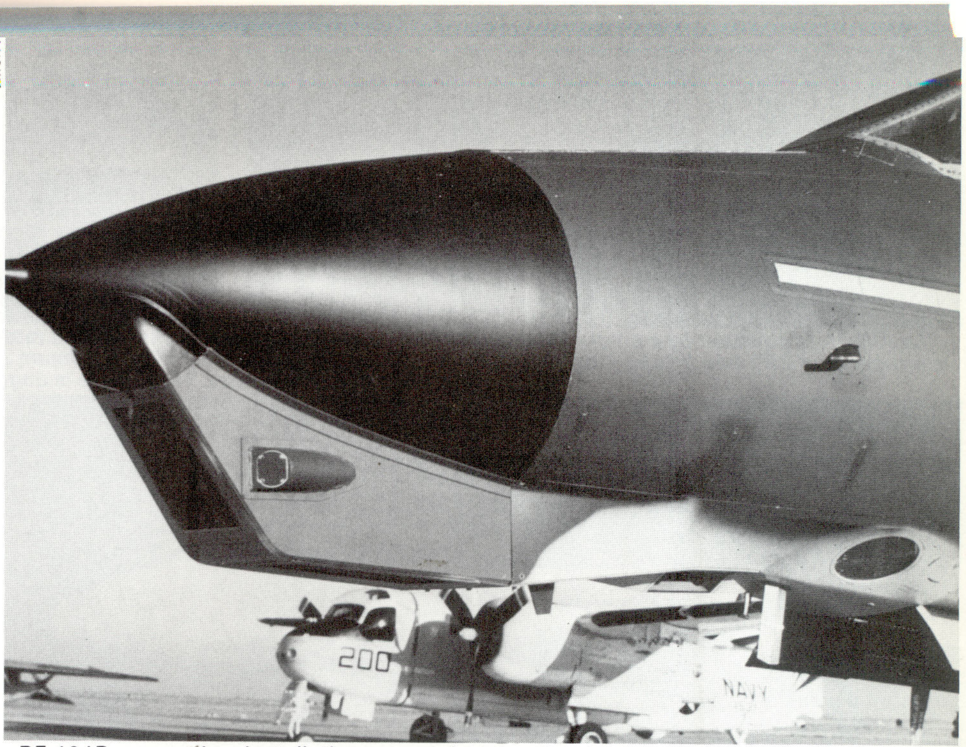


Mick



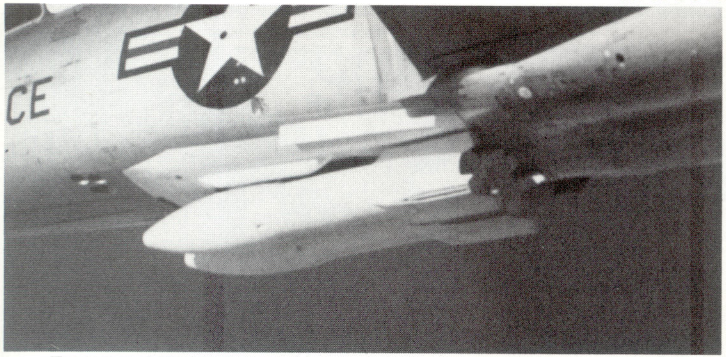
Six camera ports were available in nose of RF-101B. Visible at top are two APR-36 RHAW antennas.

Mick Roth



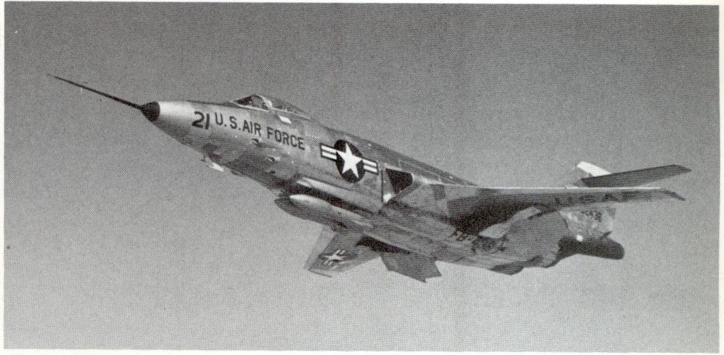
RF-101B camera bay installation was undertaken by Martin Marietta Corporation. Photo equipment replaced radar and infra-red sensor equipment found in interceptor versions. APR-36 RHAW antennas protrude from sides of forward camera bay.

MDC



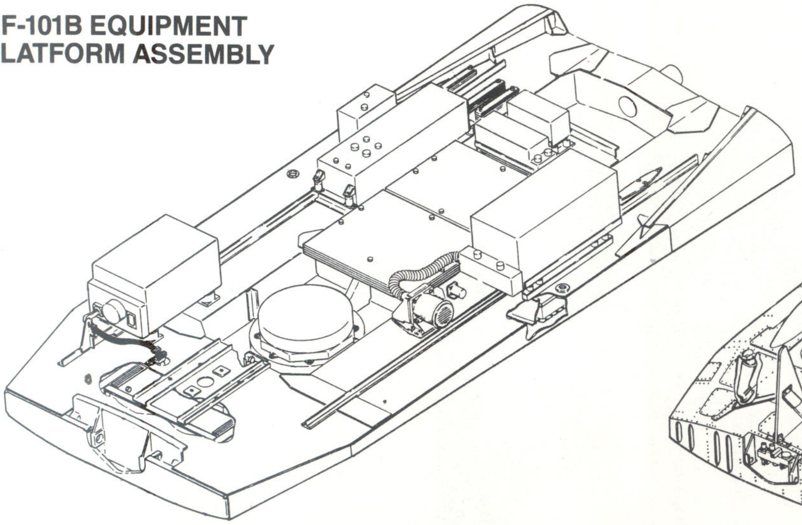
Training AIR-2's are seen mounted on weapons bay door of weapons test F-101B, 56-236. Normal AIR-2 complement was two missiles. Nuclear warhead equipped AIR-2A's have a yield of 1.5 kilotons.

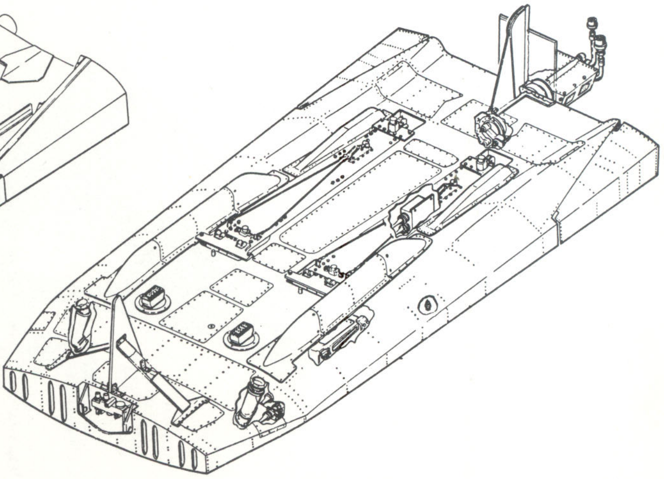
MDC



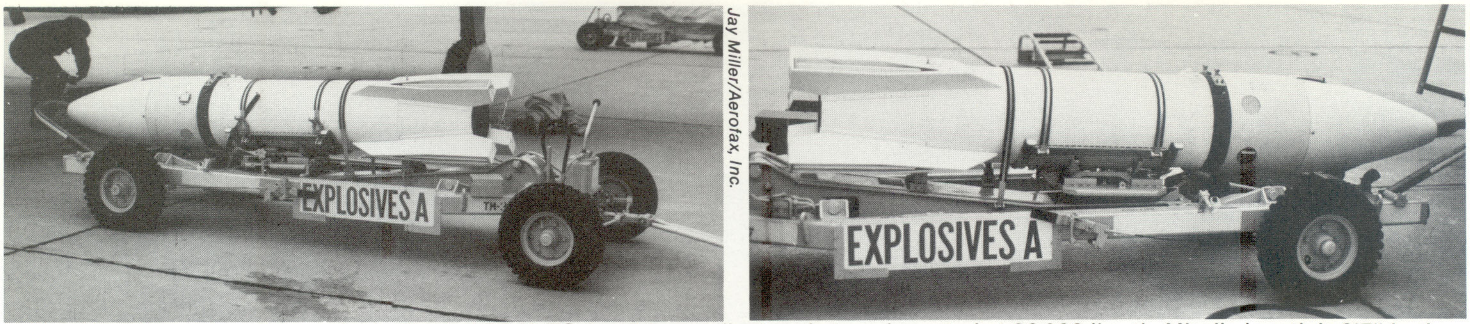
Early AIR-2 test work exploring the weapons bay door mounting for the F-101B was conducted using F-101A, 53-2436. Inert training weapons are shown.

RF-101B EQUIPMENT PLATFORM ASSEMBLY





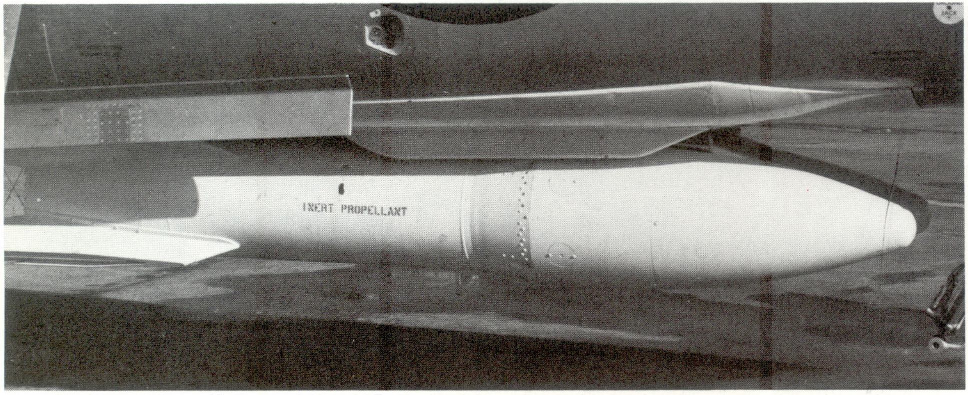
PRIMARY ROTARY ARMAMENT DOOR ASSEMBLY (*GENIE* MISSILE SIDE)



Jay Miller/Aerofax, Inc.

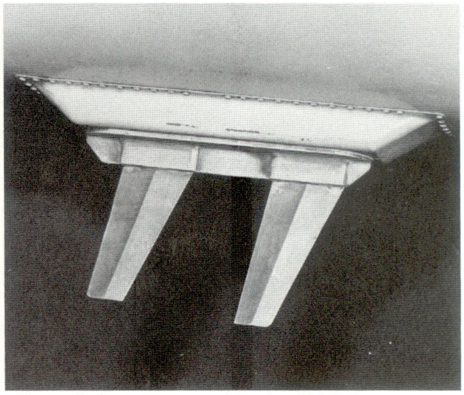
Jay Miller/Aerofax, Inc.

The AIR-2A is powered by a single Thiokol SR49-TC-1 solid propellant rocket engine rated at 36,000 lbs. th. Missile length is 9'7" body diameter is 17.35", and fin span (extended) is 39.5". Launch weight is 820 lbs. Maximum speed is just over Mach 3 and maximum range is slightly in excess of 6 miles. The missile is unguided.

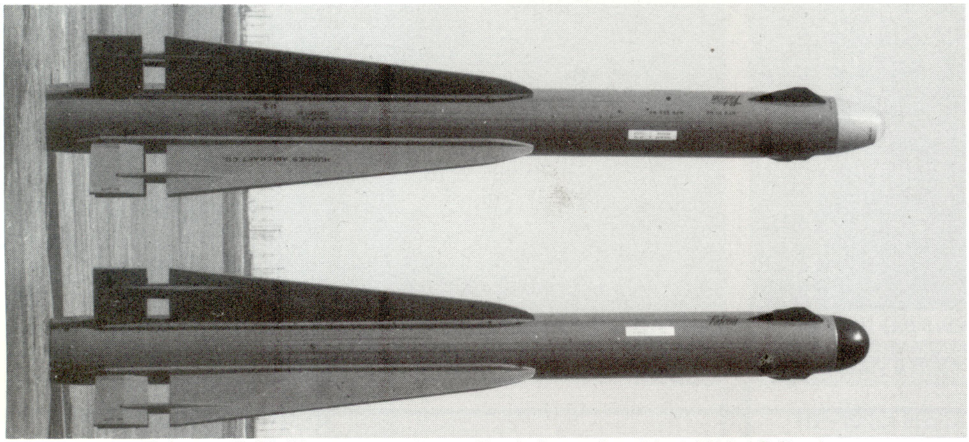


MDC

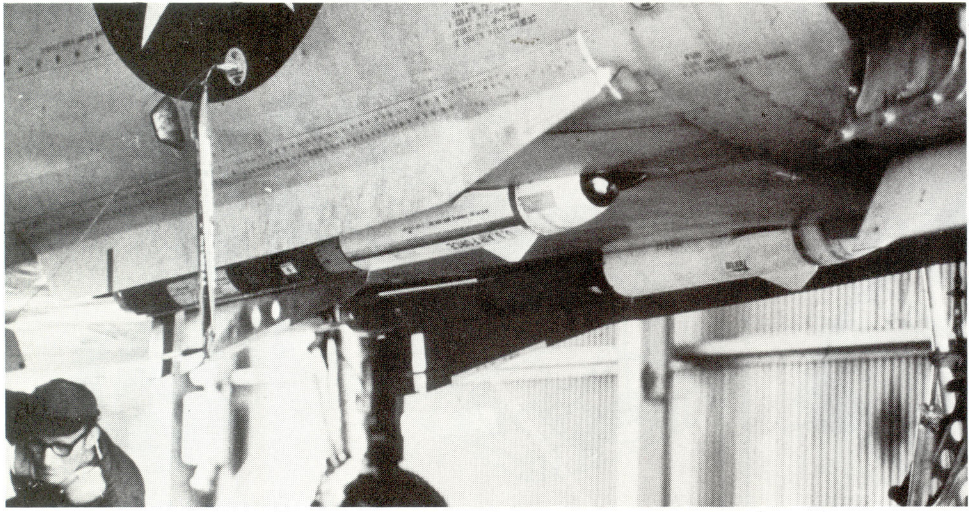
Early test installation of the AIR-2 provides view of initial rotary weapons bay door configuration and preliminary ventral strake design. AIR-2 has retractable tail fins to permit internal stowage.


Jay Miller/Aerofax, Inc.

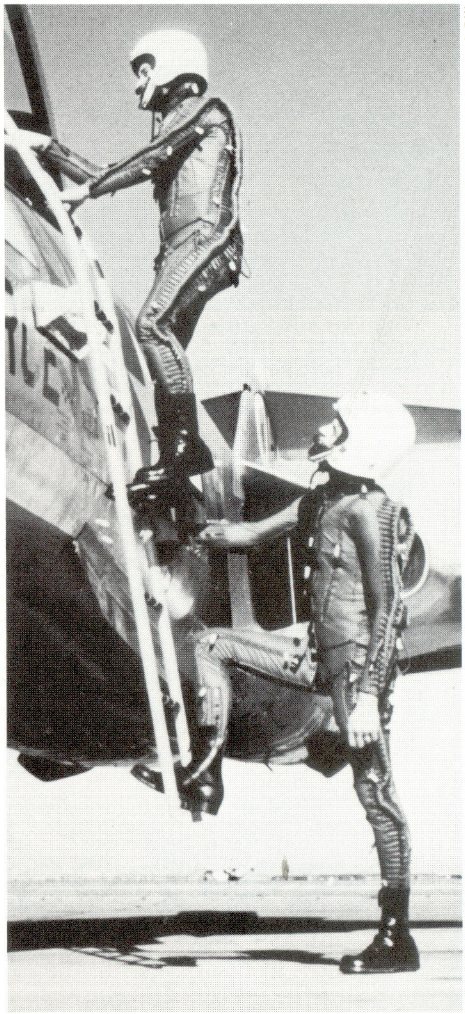
Data link antennas for the SAGE system. One antenna covered forward hemisphere and one rearward.


Hughes Aircraft Company

Primary F-101B armament was the infra-red guided AIM-4C (top) and/or the radar guided AIM-4A. AIM-4A was 78" long and AIM-4C was 79.5" long. Weight was 120 lbs. and 134 lbs. respectively.


Jay Miller/Aerofax, Inc.

Live AIM-4C's are seen mounted on rotary weapons bay door of Texas Air National Guard F-101B. Armed missiles were carried only by aircraft on alert status.


MDC

High altitude capabilities of F-101B in the interceptor role could require the use of MC-2 partial pressure suits.

AEROFAX, INC. would like to take a moment to introduce you to our new MINIGRAPH series. These high-quality, authoritative booklets have been created for the serious enthusiast and modeler and are designed to provide textual and pictorial detail not usually found in other readily available mini-monograph books of this type.

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***MINIGRAPH 3: GRUMMAN F-14A/B**
MINIGRAPH 4: MCDONNELL F-4D
***MINIGRAPH 5: MCDONNELL F-101B**
MINIGRAPH 6: BOEING B-52G/H
MINIGRAPH 7: GRUMMAN EA-6A/B
MINIGRAPH 8: BOEING P-26A
MINIGRAPH 9: NORTH AMERICAN RA-5C
MINIGRAPH 10: ROCKWELL SPACE SHUTTLE
MINIGRAPH 11: LOCKHEED P-3A/B/C/D/E
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AEROFAX, INC. also would like to mention that a new aviation magazine, to be called AEROFAX QUARTERLY, is in the works and due for release in the spring of 1984. If you would like to have your name added to the mailing list of those who will be receiving introductory copies and introductory subscription rates, please write.

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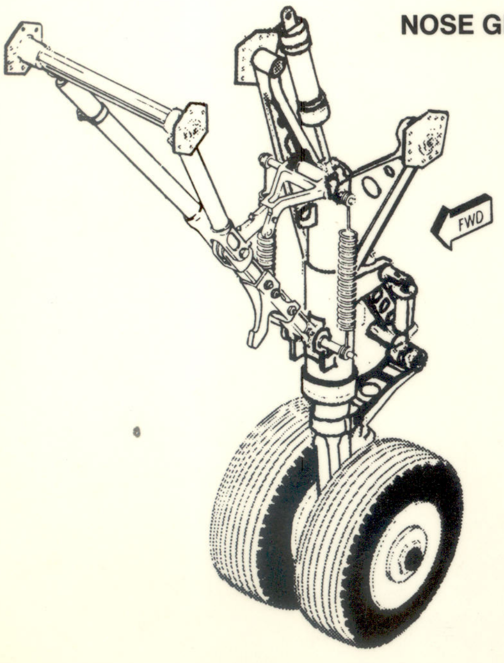
AEROFAX, INC. looks forward to hearing from you....

Sincerely,
Jay Miller and
the AEROFAX
Editorial Staff

NOSE GEAR



MAIN GEAR